NEW ZEALAND coal

Vol. 14: No. 4: AUTUMN 1970

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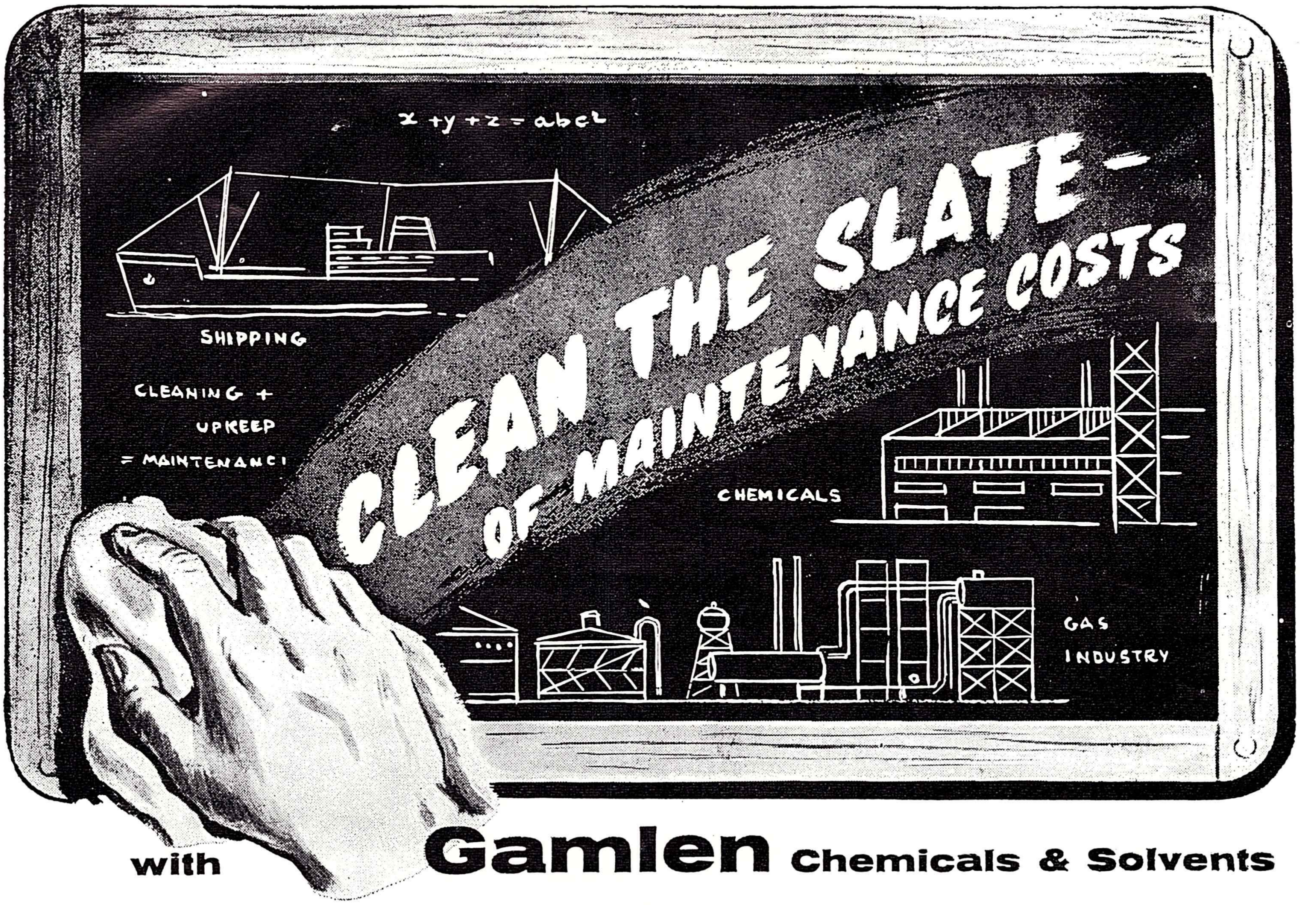

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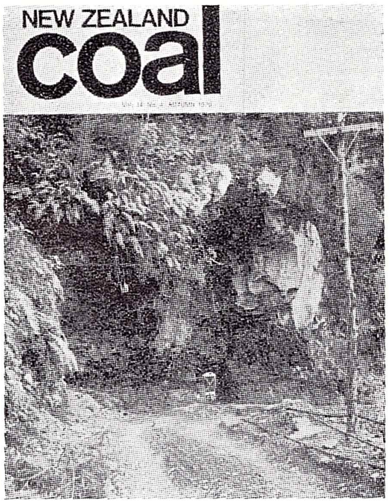

OUR COVER PICTURE

Cascade Mine, Buller: typical of the scenic setting of so many West Coast coal mines.

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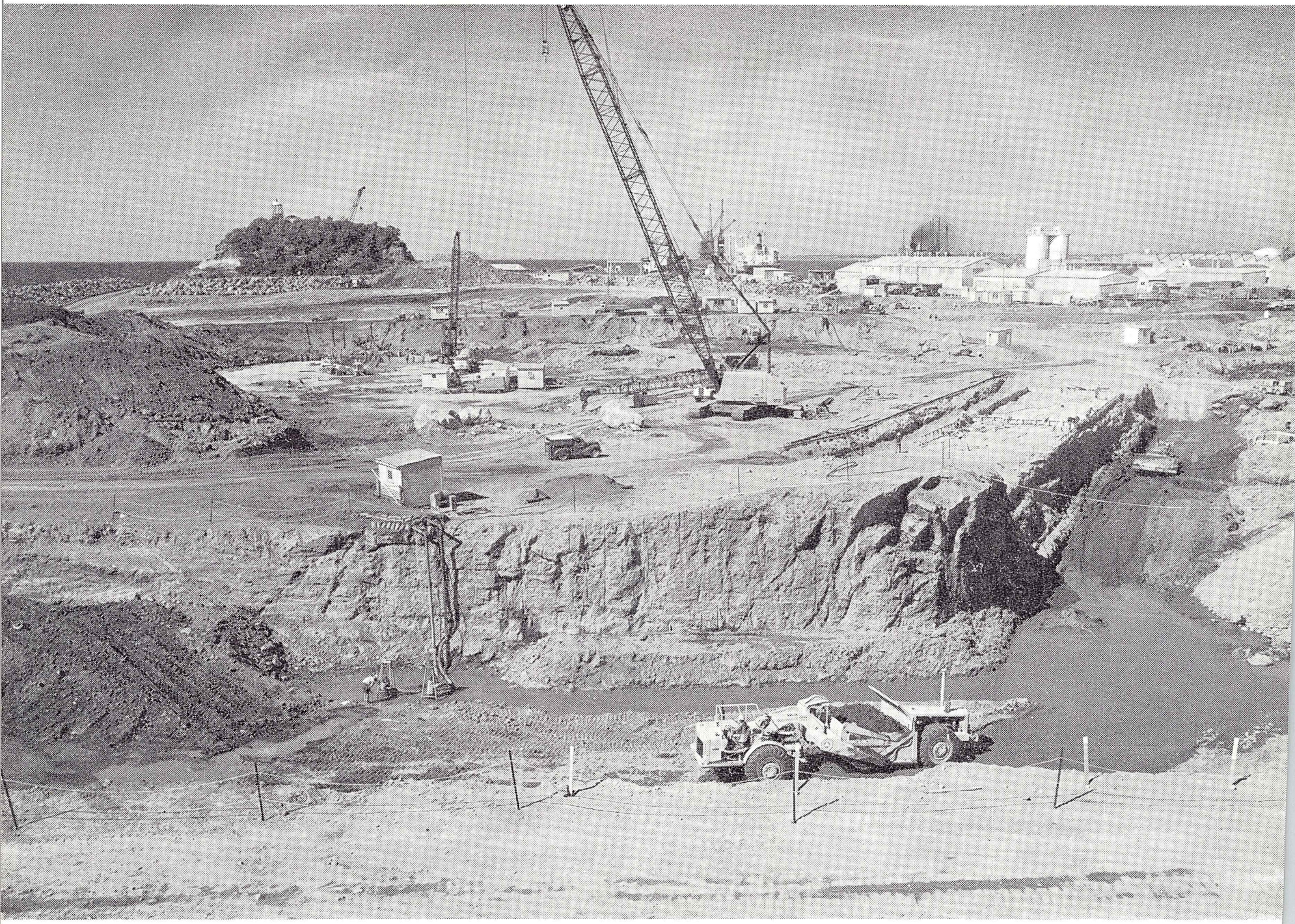


Site work for New Plymouth coal-fired electricity generating station — progress as at February.

The New Plymouth Power Station

"White coal" — electricity — will be generated from Buller coal by 1973 when the first generating set at the New Plymouth power station feeds into the national grid. With an increase in the annual demand for electricity of 7.4 per cent, power consumption has outstripped the few remaining prospects for hydro-electricity generation in the North Island and led to the planning for coal use.

Coal already supplies the fuel for the generating station at Meremere in the Waikato, and Waikato River also provides most of the North Island's hydro electricity. Although demand is greater at the Auckland end, the Wellington area is also expanding and its power needs are growing. With most potential North Island hydro possibilities now exploited, the New Plymouth station, using New Zealand's indigenous fuel — coal — is the answer to the Wellington region's power demands.

Comprehensive and detailed studies were made before New Plymouth was chosen as the new station's site. The station had to be on a harbour, handy to receive coal supplies by sea. Also, considerable amounts of water are needed for cooling. While Wellington, having an excellent harbour, was an obvious choice because of its nearness to the centre of demand, its hills created difficulties in disposing of air pollution. The choice narrowed to Wanganui and New Plymouth, the decision going to the Taranaki port.

The closer the generator is to the major consuming area, the less power is wasted. All transmission lines have resistance and this resistance increases with distance. Moreover, the power lost through resistance increases according to a square law: if the electric current is doubled (through doubling the amount of power transmitted), the power loss is four times as great. The final effect is that over a long length of transmission line the varying loads throughout the day cause far greater fluctuations in voltage at the consumer's end than would occur over a short path between generator and consumer.*

Distance ruled out coal-fired generation at the coalfield. Transmission losses over a line from the West Coast to the North Island, added to further losses in converting alternating current to direct current from the Cook Strait link and reconversion to alternating current again, do not compare in cost with converting the coal to electrical energy adjacent to the user. Furthermore, a second Cook Strait cable would be needed, as the present link is used to capacity already. Adding capital cost for the transmission link to the power loss swings the decision to transporting coal rather than electricity as the more economical choice.

In 1966, when the N.Z. Electricity Department prepared its report it was estimated that the cost of generating on the West Coast and transmitting power to the lower North Island would be $4.40 per ton of coal more than if generation was at New Plymouth. This meant that, provided the cost of transporting coal to New Plymouth was less than $4.40, there would be an economic advantage in siting at New Plymouth. At the time it was estimated that coal transport would cost about $2.30 per ton.

The possibility of gas or oil finds at New Plymouth has also affected the design of the new power station. The boilers have been designed to be convertible for firing by gas, oil or coal, although changing from one fuel to another would require furnace restructuring during a shutdown lasting from one to three months. Consequently, while alternative fuels were considered in the design, and gas or oil may be used to some extent according to availability, coal is regarded as the main source of energy.

First deliveries of coal are wanted by August 1972, according to present planning. This is for trials and setting up before the first alternator is scheduled to begin supplying power to the national grid in January, 1973. Subsequent generators are expected to be commissioned at six-monthly intervals.

The generators themselves, have a higher capacity than those at the other coal-fired station at Meremere. Each is capable of 120 Megawatts, the total of five giving a generating capacity of 600,000,000 watts. (Meremere generators are 30 MW each). Steam design is also upgraded, pressure being 1800 lb. per sq. inch at a temperature of 540 deg. C. (1000 deg. F.). The steam, after initially feeding the turbines, is reheated to 540 deg. C. for further passes through the turbines. The boilers, which are being made by International Combustion Ltd (Derby, England), are rated for 830,000 lb. per hour. C. A. Parsons Ltd has won the contract to supply the turbines.

Power will be stepped up to 110 kilovolts and 220 kilovolts, and transmitted via 110kV and 220kV lines. Distribution at the generating station will be in separate switching stations which will be enclosed to protect feeders from salt spray from the sea.

The station is designed primarily as a base load station; that is, it will be expected to generate a fairly steady supply and not have to increase or decrease capacity suddenly for variations in the load. This is because a coal-fired station cannot respond so quickly to load demand as a hydro station.

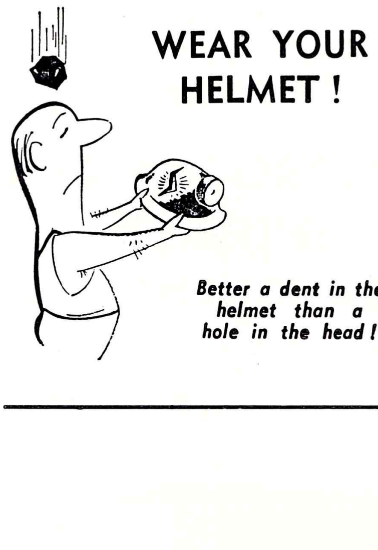
The generating capacity will, however be varied to meet broad changes as in the variation between day and night demand.

A staff of about 230 will be employed when the station is producing fully, and the N.Z.E.D. is planning to provide accommodation, as some staff will be drawn from the remote areas, where departmental housing is essential. Ministry of Works architects, responsible for the station's design are planning with particular care to complete a utilitarian building in as attractive a style as possible, and to fit into surrounding landscape with the least possible scenic obtrusion. About 40 acres of ground will be occupied by the station complex.

N.Z.E.D. is very conscious of the need to prevent air pollution, and has given the New Plymouth City Council a firm commitment that when a practicable sulphur extraction plant has been developed and proven in use, similar equipment will be installed. (Space has been provided in planning the station for such a plant.) Some of the cost of the extraction plant and its operation, the department hopes, will be offset by marketing the extracted sulphur for fertiliser or other industrial uses.

With construction of the new coal-fired station at New Plymouth now well under way, and prospects for a steady demand for Buller coal, N.Z..E.D. can turn to the next job in hand. With "white coal" demand still continuing to rise, the department is beginning to have thoughts for the end of the 1970s when yet another power station will be needed.

WEAR YOUR HELMET !



Better a dent in the helmet than a hole in the head !

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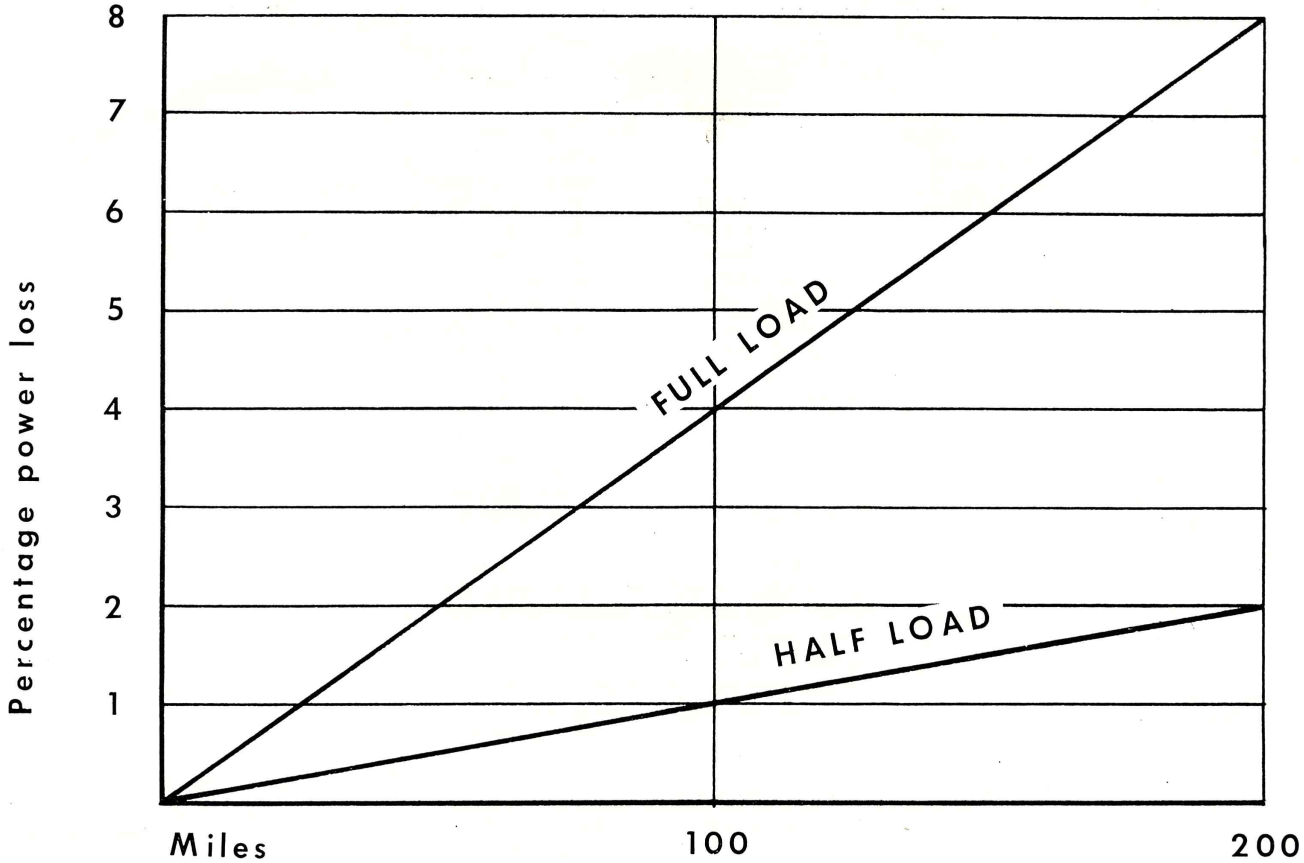
* In practice, the N.Z. Electricity Department ensures that voltages at the consumer's end are reasonably stable. This regulation does not, however, compensate for power lost over long transmission lines.



Diagrammatic representation of power loss in an electric cable, showing power loss rising with load, over distance. This diagram does not take other factors into account, and losses vary according to type of cable used.

Hydro, oil, gas, coal or nuclear — coal's position when it comes to choosing the source of energy for the next station will depend on the state of our reserves, but at least the industry is assured of a demand for its black diamonds for New Plymouth and Meremere for some considerable years to come.

COAL LEVY FOR ADVERTISING

A levy of 5c per ton of coal, for advertising, has been set by the North Island Coal Merchants' Federation. This levy has been agreed to by the Mines Department and Glen Afton Collieries Ltd. An advertising sub-committee has been appointed with three members from retail interests.

This was decided when the Federation met at Palmerston North on November 19.

The agenda for the Sales Seminar at Auckland in March or April was also discussed, and the next meeting of the Federation would be held immediately after the seminar.

The Federation decided to write to the Opencast Workers' Union pointing out that despite previous assurances a stopwork meeting had been held on the Friday before Labour week-end, so that coal had not been available to road transport operators after 2 p.m. that day.

⁂

FERRO-SILICON INDUSTRY FOR SOUTHLAND?

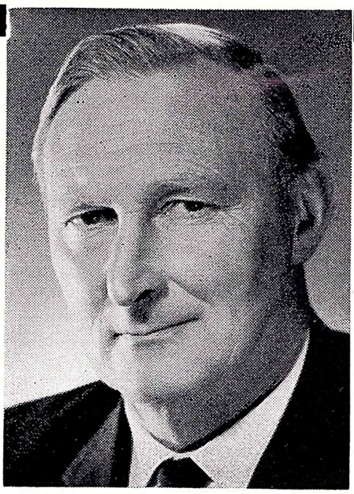
About 100,000 tons of Southland coal could be used annually, if the Government permits a Japanese company to go ahead with its proposals to build a ferro-silicon industry in Southland.

Southland has a silica field containing millions of tons of 99 per cent pure quartz deposits, stretching from the Mataura Basin to Invercargill. Processed ferro-silicon is used in steel production, and with a proposed annual production of 300,000 tons about $45-million could be earned in overseas exchange.

The Japanese company is Mirubeni-Iida, a subsidiary of Showa Denko KKK

A plant to extract the mineral would use about 1 MW of electricity for every 1,000 tons processed, and with an aluminium industry in the same area making great demands for electricity this is one of the considerations to be taken into account before the project can proceed further.

OBITUARY



Hon. T. P. Shand

With deep regret we note the passing of the Hon. Thomas Philip Shand, Minister of Mines from 1960 until his death on December 11, 1969.

Born at Oamaru in 1911, Mr Shand was educated at Christ's College, Christchurch, and at Canterbury University College, where he graduated with the degree of Bachelor of Commerce.

During World War II, he was a flying instructor in New Zealand with the RNZAF and then a bomber pilot in the Pacific.

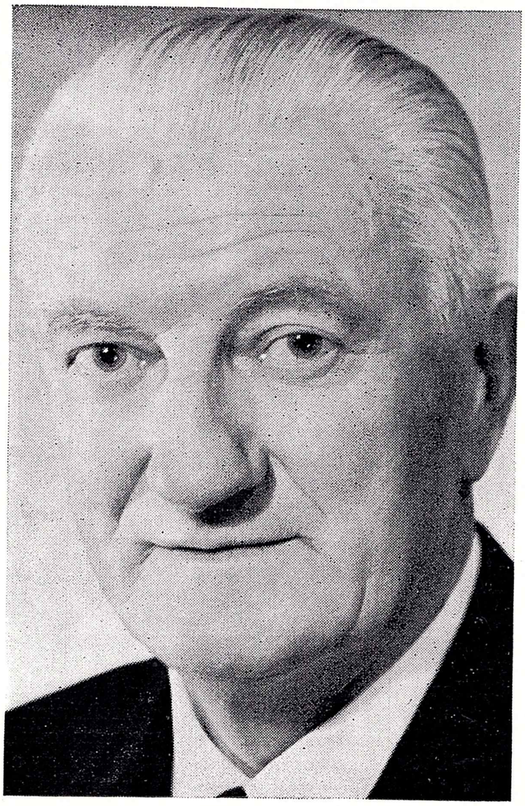
He took a course in Valuation and Farm Management at Canterbury Agricultural College, Lincoln, after the war, obtaining his diploma.

Mr Shand was first elected to Parliament in 1946, and in the first National Government he held the portfolios of Postmaster-General and Civil Aviation. He was Chairman of the Cabinet Committee of Government Administration, also Minister in Charge of Tourist and Health Resorts. As Member of Parliament for Marlborough, he was Minister of Labour, Minister of Immigration, Minister of Mines and Minister of Electricity in the second National Government. He was Chairman of the Cabinet Committees on Overseas Shipping and Natural Gas, as well as being a senior member of the Cabinet Economic Committee.

Mr Shand was universally respected throughout the coal industry for his integrity and his refusal to shirk unpleasant tasks. At the time of the Strongman disaster, he personally called on every family affected — of his own volition. Having worked in mining himself at one stage in his career he was able to appreciate conditions in the industry from first-hand experience.

Mr Shand was married to Dr Claudia Weston, daughter of the late Mr Claude Weston, K.C. To Dr Shand and her son and three daughters "Coal" magazine extends its sympathy in their bereavement.

Message to 'Coal' from the Hon. N. L. SHELTON, Minister of Mines



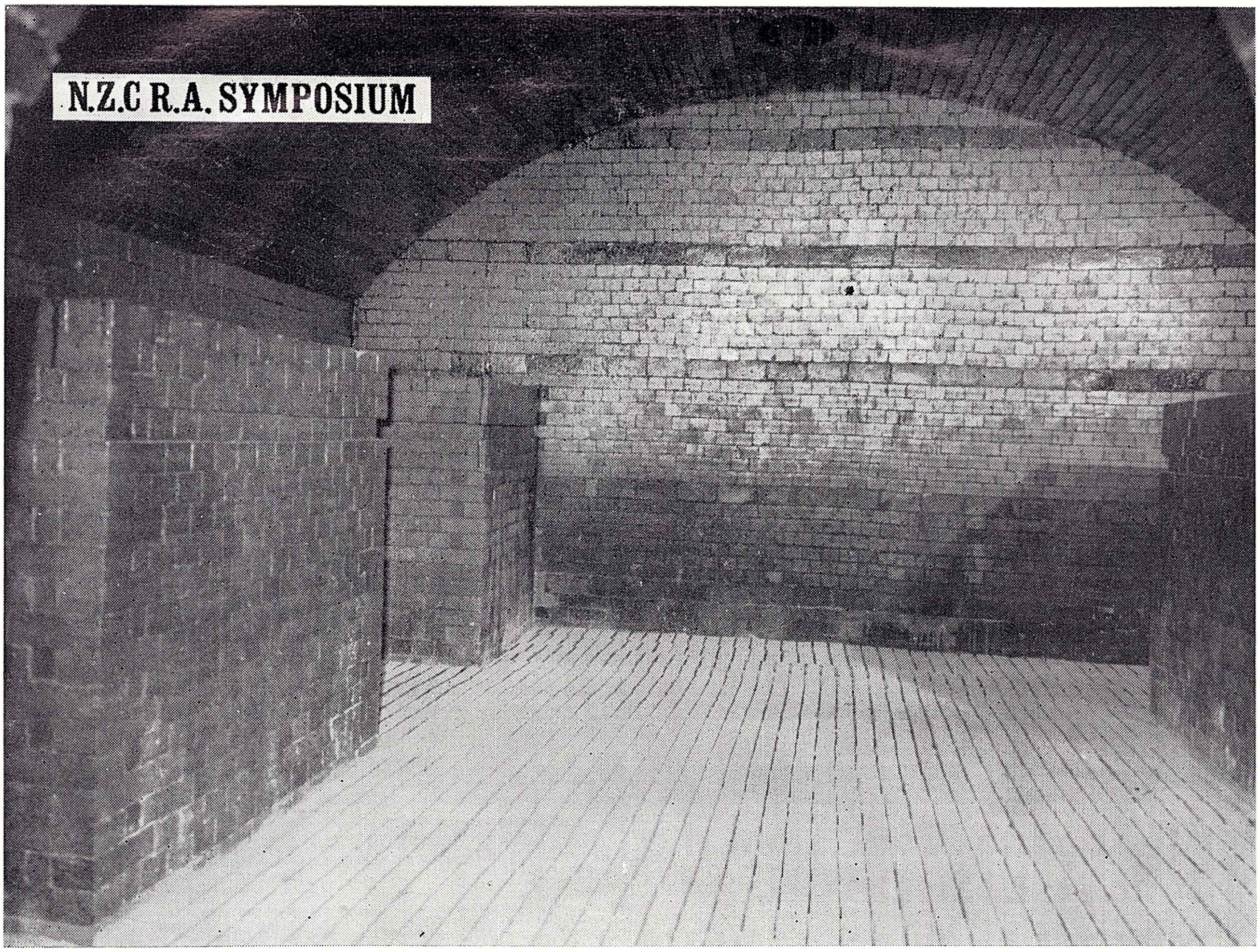
I am very pleased to have this opportunity to address the coal industry through "Coal" magazine. As time goes on, I look forward to meeting personally, members of this industry, which is an important one to New Zealand.

We all regret the passing of the late Hon. T. P. Shand, who was my predecessor as Minister of Mines. He was highly regarded by all of us in Cabinet, and was a personal friend of mine for many years. I know that he was highly thought of as a forthright personality who will be missed by the coal industry as well as by the country in general.

The National Development Council predicts a steady rise in coal use, so I am disappointed that one of my first duties as Minister of Mines has been to see the Kaitangata Mine closing through lack of orders for its coal. Wherever it is possible, I want to see coal use developed and new markets or outlets created so that the industry will overcome former setbacks. It is important, in the changing climate of world trade and with New Zealand having to develop new markets, that the coal industry should have a part in the progress taking place, but it is also in this climate of efficiency and progress that developments for coal will be made.

Later this year I am looking forward to sponsoring the new Mines Bill during its passage through Parliament, and this will be another factor in helping mining.

I am pleased to see that the combined efforts of the management and the unions are beginning to lead to improved efficiency and cost stabilisation, as evidenced by the fact that in the past year the State Coal Mines have been able to absorb the $2 per week pay rise, sickness benefits and increased holiday pay. This was done without increasing the ex mine price of coal, yet at the same time achieving a very substantial reduction in the overall deficit. The industry must achieve higher productivity and a rationalisation of operations if coal is to play its rightful part in the national economy. The events of the past year show what can be done, and there is no doubt the future will bring even better prospects.



A view of the inside of the stoker-fired kiln. The fireboxes, behind the bag walls, can be seen protruding into the kiln space.

Stoker firing of kilns

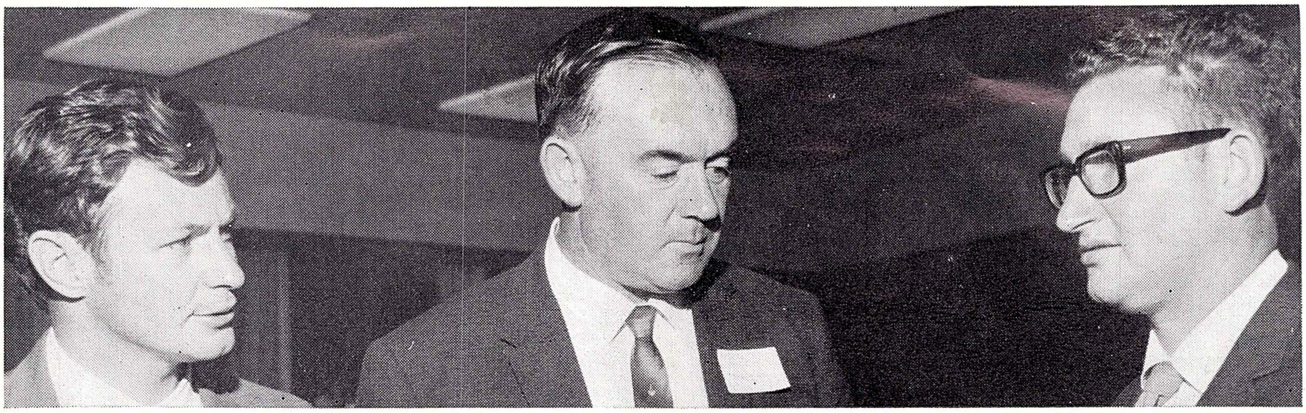
Most of New Zealand's manufacture of bricks and of earthenware pipes relies on the time-honoured methods of firing the ware in intermittent down draught kilns. The ware is stacked in the kiln, fired for a period of about a day and left there until the kiln cools sufficiently for its removal.

The kilns are normally either circular or rectangular in shape. Their size varies, a normal-sized kiln being one with an inside diameter of 20 to 25 ft.

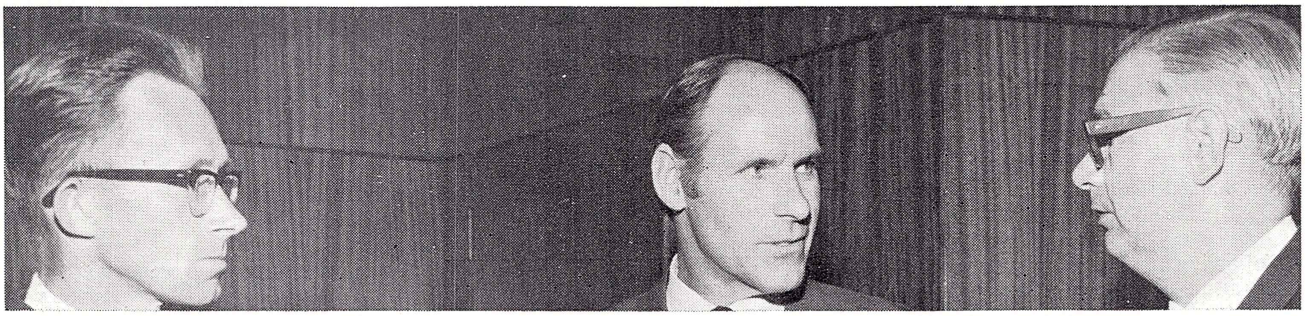
Almost since bricks were first manufactured, this type of kiln has been used. Normally there are 10 to 12 firing ports, or fireboxes, around the kiln where the coal is burnt on a grate. The hot flue gases are carried into the top inside of the kiln, down through the stacked ware, through the chequered brick floor which supports the ware and then to a chimney for discharge to the atmosphere.

Such intermittent kilns with manual methods of firing have long been recognised as a source of smoke. The ceramics industry and the coal industry have realised the need for improvement in this respect if these traditional markets for coal are to be retained.

Mechanical stokers such as are now universally used in industrial boilers have a great advantage over hand-firing, in that coal is added continuously to the fire. Properly set, such a stoker can operate with the complete absence of smoke in the flue gases. Overseas, attempts have been made to apply such mechanical stokers to the firing of intermittent



Roy Buckley, Rex Smith, NZCRA and Ray Campbell. Mr Buckley and Mr Campbell addressed the symposium on the Kiln-Fire Stoker.



The main speakers on underfeed stoker firing — Ian Crum, Bill Newfield and Frank Bell.

pipe and brick kilns, and New Zealand has not been far behind in these developments.

The first man to install stokers on kilns was Mr Ian Crum, of Crum Brick Tile and Pottery Company Ltd, Auckland. Over the last five years, Mr Crum has established himself as the pioneer in such developments in New Zealand. He has concentrated on under-feed stokers, where coal is carried by a screw into a retort in the combustion chamber. The coal burns continuously as it flows up and over the top of the retort. Air for the combustion is supplied by a fan. Mr Crum's development work brought many inevitable teething troubles, which were gradually overcome, and today, Mr Crum has a completely reliable firing system. Other clay manufacturers have followed suit and installed under-feed stokers — in Auckland, Mackays Brickworks Ltd; in Silverstream, Amalgamated Brick and Pipe Co. Ltd; and in Christchurch, Murphy Bros Ltd. and Austin Chalk Co. Ltd. In most of these works the same general teething troubles were encountered and, moreover, each installation brought problems peculiar to itself. Most of these new installations benefited in their early operation from the experience of Mr Crum, who has always been available with advice.

Last year, A. D. Campbell Co Ltd., at Browns, Southland, installed another type of mechanical firing — the Kiln Fire Stoker — a coking, or low ram, stoker modified for use on kilns. This equipment has been developed in Australia and is proving very popular with the ceramics industry there.

The interest of the clay industry in stoker firing has increased greatly with the several successful installations throughout the country. A symposium was arranged in December of last year, by the New Zealand Coal Research Association, to discuss past and future developments in the stoker firing of kilns. There was a wonderful response from the clay industry — members came from as far afield as Auckland and Invercargill. Stoker manufacturers were represented and the technical men of the coal industry were there in force.

The main speaker at the Symposium was Mr Ian Crum, who delivered a paper describing his experiences at New Lynn. Mr Bill Newfield, with some two years' experience with under-feed stokers at Murphy Bros Ltd. at Christchurch, also made a valuable contribution. Other speakers were:

Mr F. W. Bell—Operation at Amalgamated Brick and Pipe Co. Ltd, Silverstream;

Mr W. Milne, N.Z.C.R.A.—Operating Details at Mackays Brickworks Ltd;

Mr J. J. Seymour, Mines Department—Operation of Under-feed Stokers.

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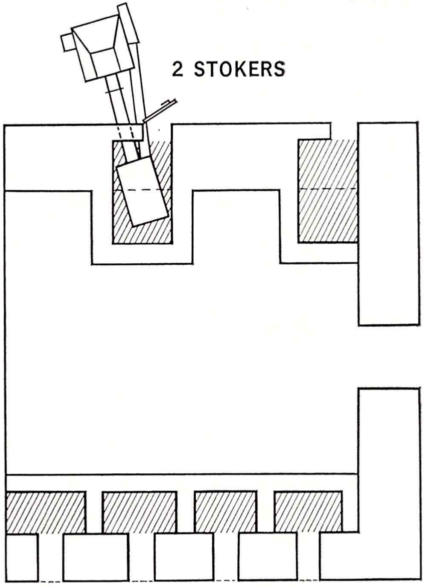
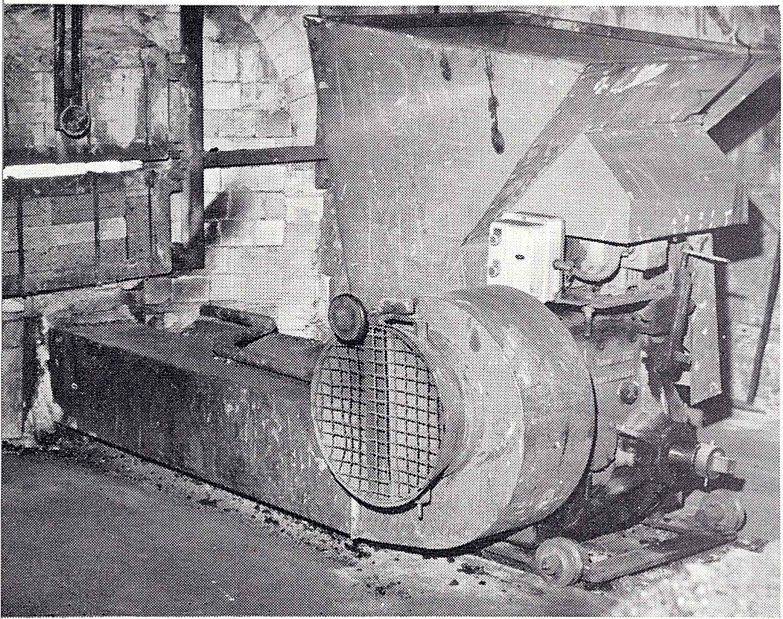
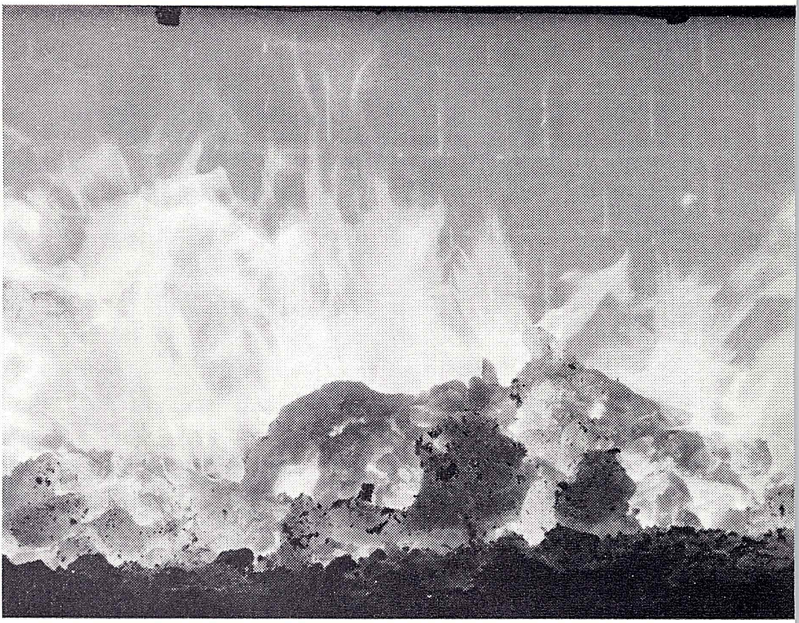


Plan of the rectangular kiln described by Mr Crum. The fireboxes, shown shaded, are separated from the kiln by "bagwalls". The hot flue gases pass over these bag walls into the top of the kiln, before the kiln was converted to stoker firing. On the other side, the installation of the stokers is illustrated —the number of fireboxes has been reduced to two and a stoker is installed in each firebox.



An underfeed stoker, showing hopper gearbox and fan, installed on the outside of the firebox.



The coal burning above the retort, in the firebox.

Following these papers, a round-table discussion between the speakers on under-feed stoker firing was held.

Further papers followed:

Mr R. M. Hastie, N.Z.C.R.A.—Coal-Handling Systems in Brickworks;

Mr R. Buckley, Crown Lynn Potteries Ltd—The Kiln Fire Stoker;

Mr R. Campbell, A. D. Campbell Co. Ltd., Browns—Operation of the Kiln Fire Stoker in Southland.

In opening the symposium, the Director of the New Zealand Coal Research Association expressed his appreciation of the willingness of the speakers — competing members of the clay industry — to pool their information for the benefit of their industry. He stressed that members of the coal industry were not there to instruct, but to learn — to learn from the people in the clay industry who had become experts in the stoker firing of kilns. He said that the symposium had been arranged for the dissemination of their experience — not only directly to those attending that day but, through the fuel technologists of the coal industry, to the whole of the ceramics industry.

The proceedings of the symposium are to be published in the near future and the technical content of the symposium will be described in those proceedings. In this brief descriptive article, diagrams and photographs which were presented at the symposium are shown. There is also the following table, presented by Mr Crum, in which he compared the operation of his under-feed stoker-fired kiln with a hand-fired kiln.

	Coal consumption tons per burn	Cost of coal $ per burn	Charge in kiln tons	Firing time hours
Hand firing	7¾	154	30	26
Stoker firing	4½	81	32	17

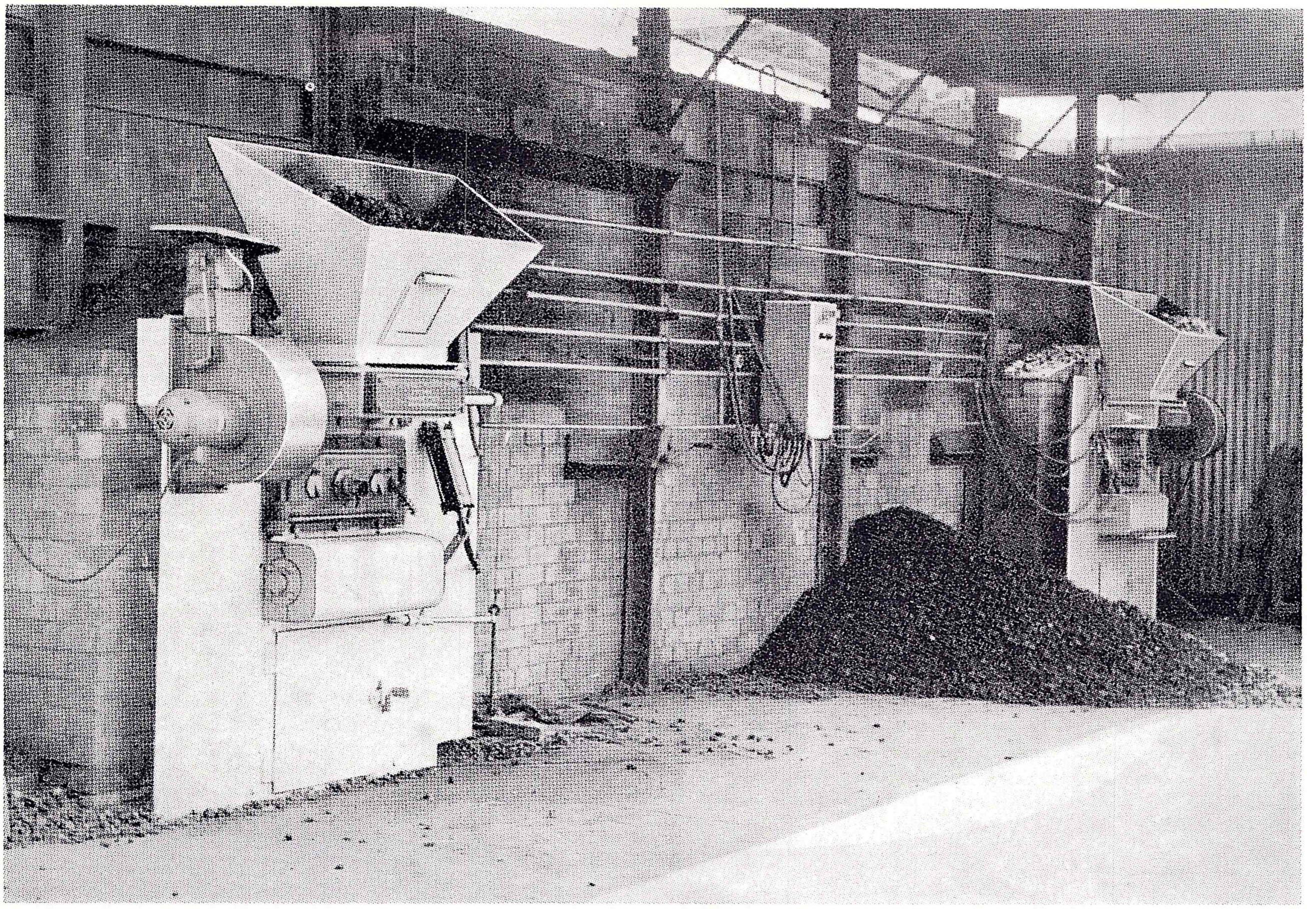
The advantages which kiln-firing offers are immediately obvious from this table. Other features which Mr Crum discussed were the vast improvement in the operators' working conditions and the reduced maintenance charges. The cost of replacement of stoker parts over 250 burns had amounted to only one-sixth of the cost of replacing firebars in equivalent hand-fired kilns. The better control of temperature and of the combustion conditions, and the greatly reduced period of high-temperature operation all contribute to reduce the cost of repairs to the kiln and to the fireboxes to about half of that experienced with hand-fired kilns. Of course, by far the most important factor is the complete absence of smoke emission with stoker-fired kilns.

Mr Crum realistically considered the disadvantages of stoker firing: the need to teach operators entirely new techniques, the need to maintain fires carefully in order to prevent fly ash being carried into the kiln and the need for a more constant check on kiln operation because temperatures could rise so much more quickly.

The interchange of information at the symposium was especially valuable to the people who were already operating under-feed stokers and to those who were considering installing them. All the speakers had met problems in their initial operation. The symposium left one with the feeling that the wide variety in the type of kiln, in the clay used and in the article produced all brought to each installation its own problems. On many occasions during the day's discussions, it was evident that techniques developed in one kiln in one part of the country need not necessarily be assured of the same success in other kilns elsewhere. However, in various ways each installation had overcome its teething troubles and all were very happy with the operation of their under-feed stokers.

Mr Campbell's experience with the kiln fire stoker also reflected the promise of successful operation with this second type of mechanical stoker. The first installation of its type in New Zealand has been operated for only a few months, but its performance, along with its established success in Australia, gives the coal industry every confidence of its similar success in New Zealand.

The most heartening conclusion which the symposium brought to the coal industry was the conviction that with stoker firing, air-pollution problems from intermittent kilns were at an end. The industry's fuel technologists have realised that when their advisory activities take them on a visit to a brickworks, a completely clear stack is now no indication that the kilns are not being fired.



A kiln-fire stoker installation.

PROGRESSIVE MANAGEMENT IN 1923

Techniques of management, which today would be considered excellent in any progressively-minded industry, existed in the coal mine where Mr J. Anderson (Manager of Liverpool No. 3 mine, at Rewanui) began work nearly 50 years ago.

Mr Anderson was 14-years-old when he went underground for the Ashington Coal Company of Ashington, Northumberland (Britain). This was in 1923, but two years later he was one of 40 boys employed by the company who were chosen annually for free education. The company retained two school teachers, and the selected boys spent two days a week being taught subjects for a general education. They were paid while at school, whenever the mine was working. After a year, those boys who passed an examination on the work had a further two years' free tuition and sat the matriculation examination for Durham University with all fees paid. Successful candidates were carried on the mine's books as apprentice officials and were taught mining at nearby Rutherford College every Saturday.

There were no employment bonds for any of the boys who were trained under the scheme, Mr Anderson said. He considers the three years' education he received under the system helped him considerably in passing his mine manager's examination in New Zealand in later years.

Other employee benefits pioneered by the Ashington Coal Company were the first bathhouse in northern England (2,000 miners had to wait for vacancies among the 600 places offering in the bathhouse, and 2d a week was charged for the service) and a canteen for the mine works. Mr Anderson can still recall the pleasure of a hot bowl of soup, for only a penny, while waiting transport home in the middle of an English winter. Men kept below on overtime could send a note to the canteen for a meal and flask of tea to be sent down, and this was charged against their pay.

Apart from the general strike of 1926, Mr Anderson does not recall any production being lost through disputes in the time he was employed at Ashington. The company owned all the mines near the town, and of the 40,000 population of the town, 10-12,000 were employed by the one firm.

The company had its own staff magazine, and Mr Anderson contributed articles about New Zealand mining after he came to this country in 1929. Although he did not want to spend his life mining (his grandfather began in a mine at eight and retired at 72), after two years working on farms on arriving here, he "smelt coal" at Huntly and returned to the mines. He has continued in coal ever since, in various positions at Huntly, Ohai and the West Coast, becoming manager of Liverpool No. 3 two years ago. Formerly considered to have a precarious future, the mine has increased production from eight to nearly 12 tons per hewer, and continuing orders ensure it will remain in production in the immediate future.

CLOSED CIRCUIT TELEVISION PLAYS KEY ROLE IN RAND MINE DRAMA!

Reprinted from "Sound + Image" (published by Philips)

"On October 26, 1968, a miner, working on a slope between the fourth and sixth levels of Number Four shaft of West Driefontein Gold Mine, South Africa, heard the rockface beginning to talk. This is a mining term to describe the creaking, groaning sounds heard in mine workings. These noises are the first warning of an impending rockburst. The miner promptly withdrew his team and reported to his shift boss. He was ordered to withdraw even further.

"As the working area was evacuated, water burst through a fissure in the rockface in what was later described as an "atomised" spray. It was considered impossible to seal off the fissure and the mine was evacuated; 2,000 workers were hoisted to the surface within four hours. Only emergency crews remained below to deal with the flood which was to become a torrent as more than 85 million gallons a day roared from Number Four shaft into the mine.

"So began a 25-day drama in which South Africa's richest mine, with known gold reserves of R1200 million, fought to conquer a flood that threatened to close it for at least two years.

"Men worked in strongly flowing water that was sometimes chin high. At one stage, they had to cope with winds howling along drives and through shafts at up to a 100 miles an hour as the floods disrupted the ventilation system. Incredibly, no one was killed, and there were no reports of serious injury.

"It was a drama that held all South Africa and the rest of the world in suspense, demanding from the men engaged in the struggle the maximum in courage and endurance against appalling risks. It demonstrated once again South Africa's supreme mining and engineering skill.

"West Driefontein also gave closed circuit television its most dramatic role in South Africa. It was installed to keep vital plugs under surveillance when the flooding Number Four shaft was sealed off from the rest of the mine.

"West Driefontein's flood came as a complete surprise. Miners had blasted a drive and drilled at least 16 times without mishap through the "dry" fissure that was to spring such a costly and spectacular leak.

"But the groundwork for the flood was prepared millions of years ago by nature when she overlaid the rich gold-bearing reef of the Far West Rand with a layer of treacherous dolomite that is, on average, 3,000 feet thick.

"Through the centuries, this dolomite was slowly eroded into huge caverns that filled with water. The eroding action of water on the dolomite made the Far West Rand countryside unstable. Voortrekkers, who settled on the rich farmlands of the Western Transvaal, noted huge grass-covered depressions caused by caved-in earth. The area in which West Driefontein is situated the Voortrekkers called Gatsrante (literally: The Hills of Holes).

"The age-old instability of the dolomite and the huge underground lakes that it held have bedevilled mining operations from the beginning. Sudden cave-ins, known in South Africa as "sink holes", have claimed many lives and caused incalculable damage.

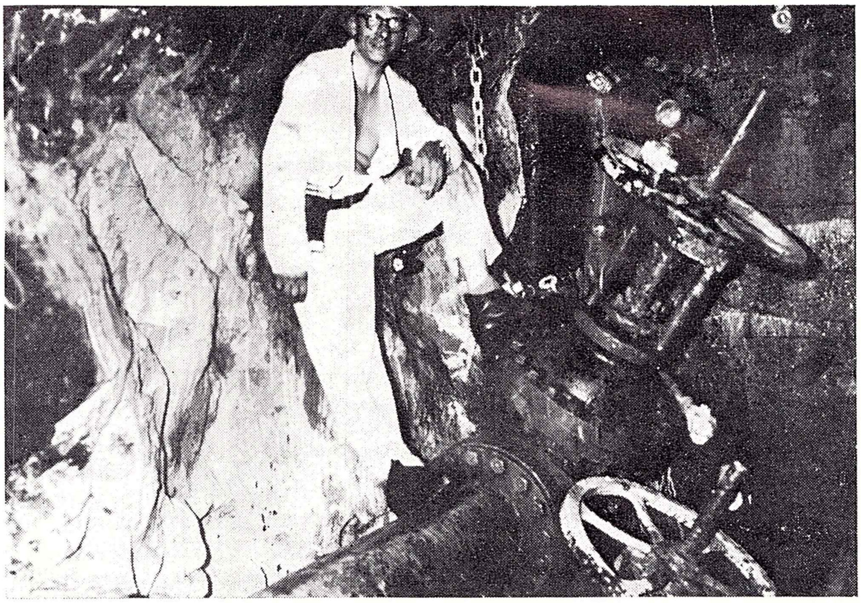
"Early prospecting and mining in the Gatsrante was thwarted by the flood risk. The first shaft, sunk in 1910, was drowned by flood waters from a fissure. As a result, exploration was discouraged for years.

"In the late 1930s, Goldfields of South Africa, the gold mining company founded by Cecil Rhodes which owns the West Driefontein mine, pioneered new methods of prospecting in what is now known as the Far West Rand Goldfields. It then introduced the cementation process, the now famous system of plugging water-laden fissures with huge quantities of cement — as much as half a million buckets of cement to a fissure.

"The dolomite structure has been particularly savage to West Driefontein in the sixteen years of its existence. A "sink hole" struck first. In 1962, after ten years of operation, in which West Driefontein earned the sobriquet of the richest gold mine on earth, a sink hole opened up on the property and swallowed the giant reduction works.

"Now it was flooding. As emergency teams struggled by the light of their helmet lamps to dam the flood with sandbags, increasingly gloomy reports gave the mine 35 days grace, then 28 and finally a bare 13 days. More pumps were borrowed and bought from other mines. Neighbouring mines, Western Deep-Levels and Blyvooruitzicht, began drilling towards the drowning mine, intent on helping to pump out the rising flood.

"The pumps had a Herculean task. The mine used 36 giant pumps at a time but these were never able to do more than pump out about 70 million gallons a day against an inflow of about a 100 million daily.

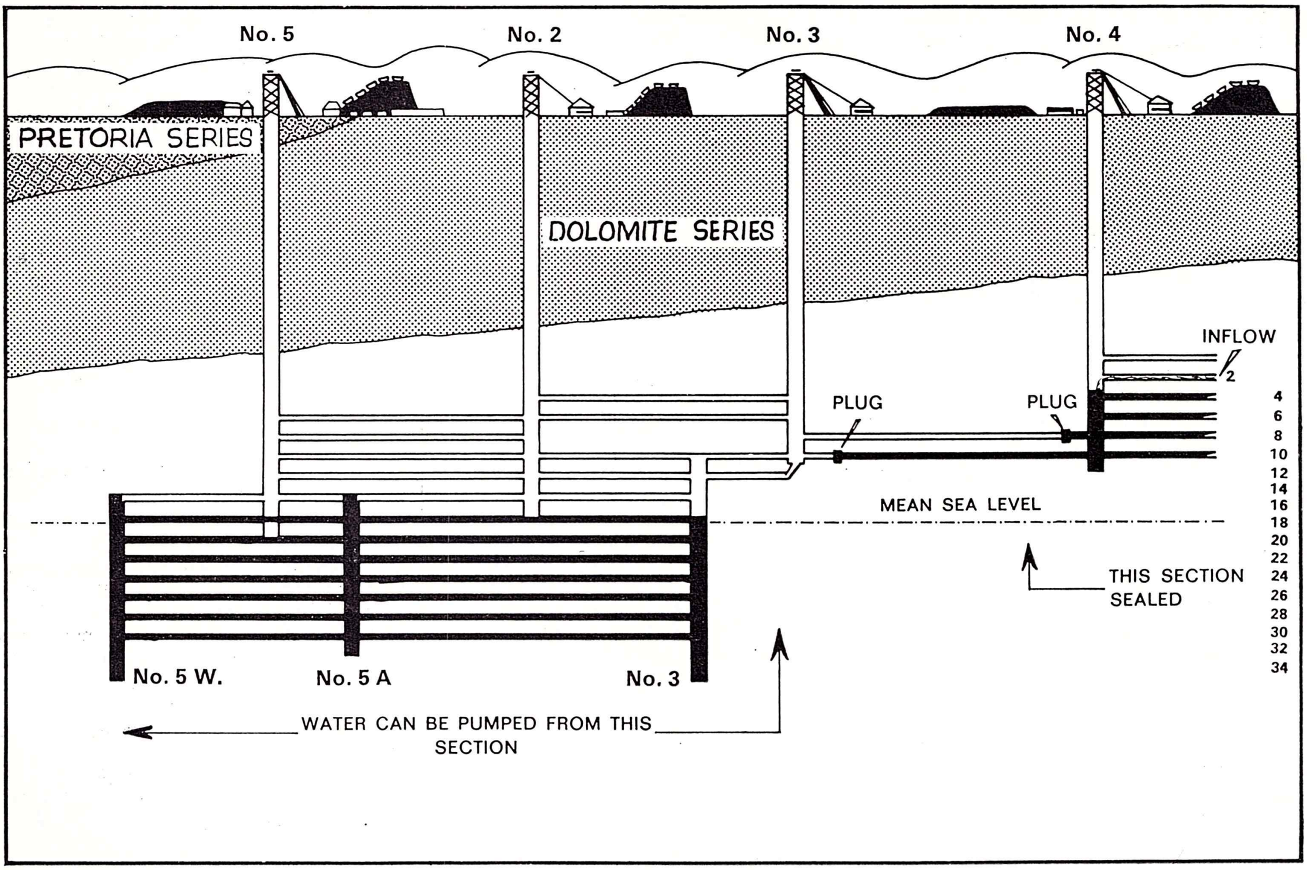


"When it became apparent that pumping would never win the race against time, engineers decided to surrender Number Four shaft to the flood and intensify the battle to save the rest of the mine, which normally produces 85 per cent of five and a half million Randsworth of gold each month.

"To do this it was decided to concentrate on "plugging" the two drives, on Ten and Twelve levels, linking Number Four shaft to the rest of the mine.

" 'Never-say-die', was the motto: 'We'll pump the mine dry even if it's connected to the Indian Ocean', the miners cried, as they worked up to their necks in the fast-flowing water.

"On Twelve-level, pipes to take the flood water were laid and packed with rock. Then 6,000 cubic feet of grout (a



MINES DEPARTMENT SALES MANAGER RETIRES

"Girth measurement — too much !" quipped "Rusty" Richmond, Head Office Sales Manager of the Mines Department, when asked by "Coal" for some information about himself. Mr Robert Richmond retires on March 31, after 40 years in the department.

Mr R. Richmond

A West-Coaster, young "Rusty" joined the Dunollie Mine staff after leaving Greymouth High School. After seven years at that mine he moved to the Christchurch office, back to Dunollie and then left the South Island as part of the drift to the north. This drift took Mr Richmond to Benneydale mine and then to the Auckland depot for a period. In 1947 he came to Wellington where he has been ever since: for three years at the depot, and subsequently as Sales Manager at Head Office.

Coal and gas were the major heating fuels when Mr Richmond began in the department, and particularly in the depression years selling coal was a tough proposition. (Australian coal was then a keen competitor with locally-mined coal.) The war years brought a complete change around, the problem being to ration supplies against demand.

More coal, Mr Richmond thinks, will be sold to fewer customers. This was his expectation for the pattern of the coal industry for the future, and the bulk, long-term buying of coal by such customers as the steelworks and the electricity generating stations are what he has in mind. Problems in handling coal, for domestic users, he thinks will count against coal in this market.

Once a keen participant in various sports, Mr Richmond is looking forward to taking even more of an interest — as a spectator — in his retirement. He has no plans for a world trip or any other immediate activity, and will continue living at Wellington for the present.

INITIAL COKING COAL SHIPMENT FROM PORT KEMBLA TO EUROPE

The vessel "Andros City", arrived in Port Kembla on November 16 to load the first consignment of southern field coking coal for export to Europe since the war.

The shipment of about 40,000 tons of high-quality hard-coking coal was produced at the Coal Cliff Colliery.

It will be discharged at Rotterdam and manufactured into metallurgical coke for use by the European steel industry.

Mr Harry Gray, general manager, Kembla Coal & Coke Pty. Limited, announced that his company had contracts for the supply to Japan of 750,000 tons of hard coking coal a year, rising to a rate of 1,500,000 tons a year from 1972. This was the company's first sale to Europe, said Mr Gray.

A substantial demand existed in Europe for coal of the quality produced at Coal Cliff, and further sales were under consideration, he added.

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RAND MINE DRAMA

(concluded from page 11)

mixture of sand and cement), had to be pumped in under pressure of up to 4,000-lb-per-square-inch.

"When the time came to close the valves on the pipes controlling the flow of flood water through the "plugs", men would do the job. But they could not be expected to remain in the danger area to see if the 'plugs' would hold.

"There was one medium that could do the job — closed-circuit television.

"The Goldfields Group already had Philips television units in use elsewhere for security purposes. So they turned to Philips again with an urgent order for closed-circuit television equipment. Initially, the engineers wanted a camera to watch the 'plug' on Twelve-level. Once the valves were closed, this was expected to bear the greatest pressure — between 14,000 and 15,000 tons on a 10 ft. sq. surface.

"Within 36 hours, Philips television and the mine's engineers had bolted a weatherproof-type PM 1000/04 camera to the hanging wall and linked it with 10,500 ft. of low-loss coaxial cable to a 23 in. monitor on the surface.

"About 5,000 ft. of cable was bolted to the Twelve-level hanging wall back to Number Three shaft. Another 5,000 ft. was then installed up the shaft to the control offices. It was by far the longest CCTV link installed in South Africa. A PM 1370/02 video correction amplifier had to be installed near the monitor to compensate for the cable losses.

"Mine engineers were delighted with the clarity of the picture. Later, a second camera with a similar length of coaxial cable was installed on Ten-level to keep another "key plug" under surveillance.

"On November 18, South Africa held its breath as the mine management announced that the huge valves were to be closed. The use of CCTV in the crisis quickly became glamour news and everyone knew that engineers would be scanning the 'plug' faces on the television screen hour by hour.

"The 'Johannesburg Star' described the drama of the 14-man crew being watched on the screen by engineers on surface as they closed off the valves with these words: 'A miner below turned towards the camera, gave the thumbs-up sign and jubilation spread through the building'.

"West Driefontein's men had won.

Two days later, men were mining again on Twelve-level. The mine was back in limited production. The pumps were at work de-watering the section of the mine that had been used as a reservoir while the 'plugs' were being built. Eighty-five per cent production capacity within four months was predicted.

"And engineers set about salvaging Number Four shaft, drowned in a huge volume of flood water.

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West Coast Coal Mines Tour

By rail to Rewanui: the mines without road access.

Anyone who thinks of coal mines in terms of drab, ugly slag heaps or smoky, dull Welsh villages has never seen the coal mining industry on the West Coast. The rugged hills and rich vegetation pose a problem in extracting the prolific mineral but offer some compensation with the superb scenery surrounding most mines. The geological processes which have formed the Southern Alps have broken up the coal seams so that most mines are economically worked by small parties, therefore big operations which can use mechanisation effectively are not generally practicable but, on the other hand, many of the smaller mines have been successfully operating with hydro systems for several years.

While coal was once a major industry on the West Coast, tourism (among others) is forging ahead as the Coast realises the enormous potential its scenic attractions offer. Naturally, the ingenuity Coasters are noted for is being turned to exploiting tourism, and particularly in Reefton the coal industry is playing a major part.

Garvey Opencast State Mine (near Reefton): in sight of Mt Cook.

Reefton staged a spectacularly successful Gold Rush Festival over the holiday period, both mine management and staff participating with enthusiasm. Miners took part in organising and providing floats for a procession, and the Private Coal Mine Owners' Association set up and ran a miniature railway for children. The engine was an old electric loco, repowered with a petrol engine, and the train was made up of four boxes from the Dauntless (State) Mine. Numbers of visitors to Reefton prolonged their stay to enjoy the gold panning and other attractions of the festival, and have expressed intentions of coming back next year. Most organisations in Reefton worked alongside the mining interests towards making the festival such a success, as extra money brought into, and spent, in the district by the tourists contributes to the wealth of the community.

Coal for Tourists

Mr Garth Hallaran, driving a new mine to reach the seam being mined by himself and his brothers is planning the new mine with an eye to contributing to tourist attractions. The new shaft is on the hillside only a very short distance from the centre of Reefton, and observation chambers will be provided inside for visitors to experience going down a mine. Some old mining relics will be displayed as a small museum, and the mine entrance has had trees planted to hold the soil and give an attractive scenic appearance.

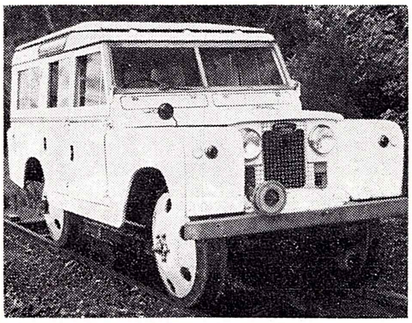
Like almost all the 17 private mines in Reefton, this mine uses water to extract the coal and carry it in flumes to the bins. Wherever the hydro system is used on the Coast, operators agree that it is safer, cleaner (dirt and stones are extracted by the process), gives cheaper coal and enables more extraction. Some operators point out the safety advantage — just switch off the water and listen to the coal "talk". Reefton coal is good quality sub-bituminous, very low in sulphur and the private mine owners are proud of their success in running their mines profitably while absorbing recent increases in operating expenses.

About five miles out of Reefton, heading towards Canterbury, a signpost points to a side road labelled Garvey State Opencast Mine. A five-mile drive up a good metalled road climbs to the mine, 2,800 ft. above sea level.

Cineramic

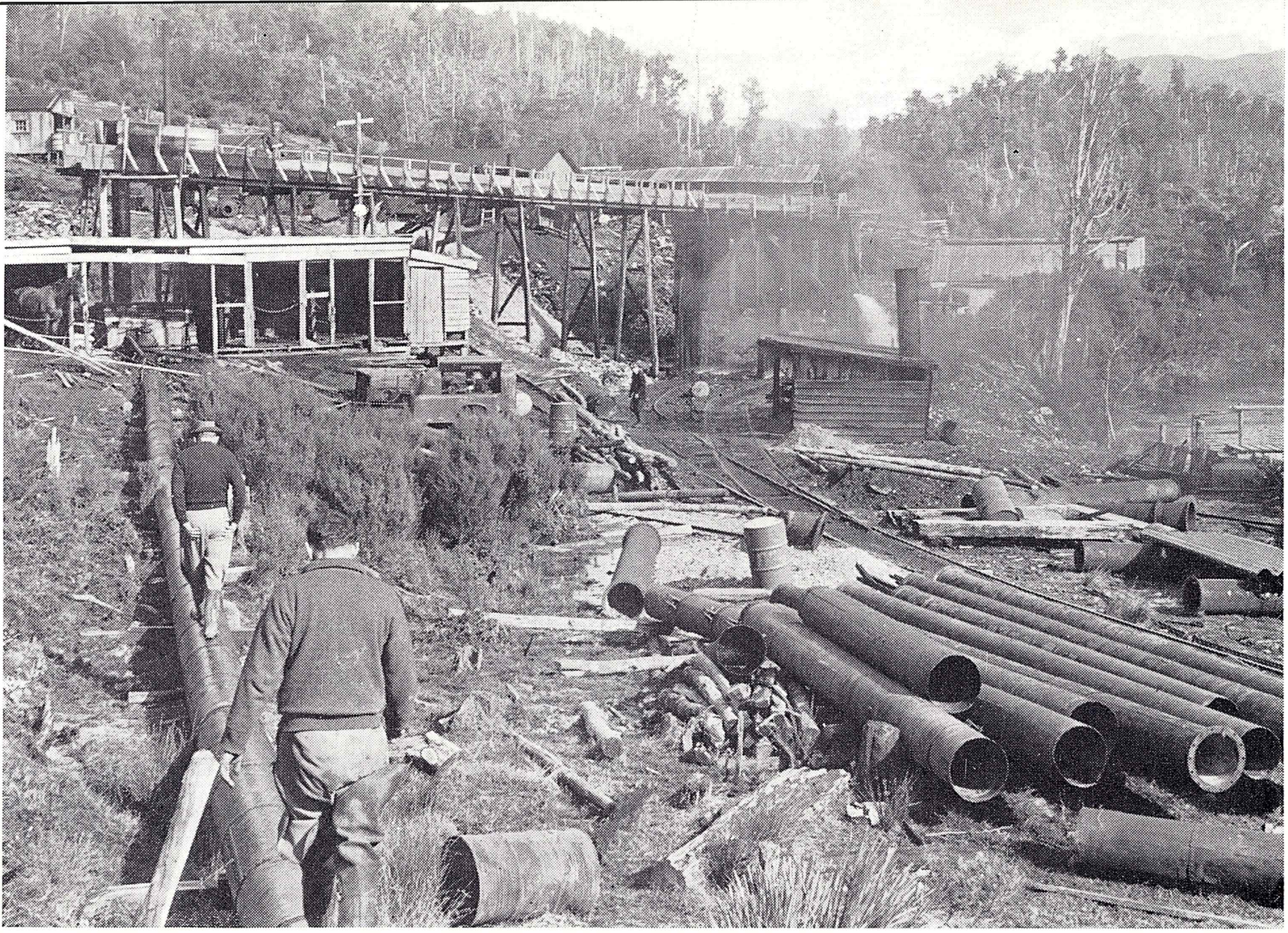
The grand vista at this mine is cineramic — one expects a full orchestra to play stereophonic music as the technicolour panorama of green bush, blue sky and alps, white snow and red rata is seen from the edge of the workings. The great sweep of valleys, covered in trees, dominated by snow-capped peaks is the antithesis of all that coal mining is traditionally associated with. The seam has been worked lower down with underground methods, but the opencast workings took over in June, 1963. (There are actually two seams, giving a total thickness of 40 ft. of good-quality, low-sulphur-content coal). The official in charge, Mr R. D. G. Roberts, must be unique in mining for being able to look at Mt Cook every fine day — a sight tourists pay to see. The mine produces coal on two days each week, averaging 350 tons. Only two men are needed to work the bulldozer and front-end loader, with an extra man for loading. Production is lost some days in winter, when snow on the road freezes and makes access impossible for trucks.

If Garvey Opencast Mine is almost frightening with the scale of its mountain scenery, Charming Creek Coal Mine at Mohikinui (some 30 miles above Westport) aptly deserves its name of "charming". Three waterfalls are handy, the creek provides a pleasant swimming pool for a dip after the day's work and the typical lush West Coast bush has a variety of beeches (silver, mountain, red and black), rimu and kahikitea to make the site a scenic paradise.



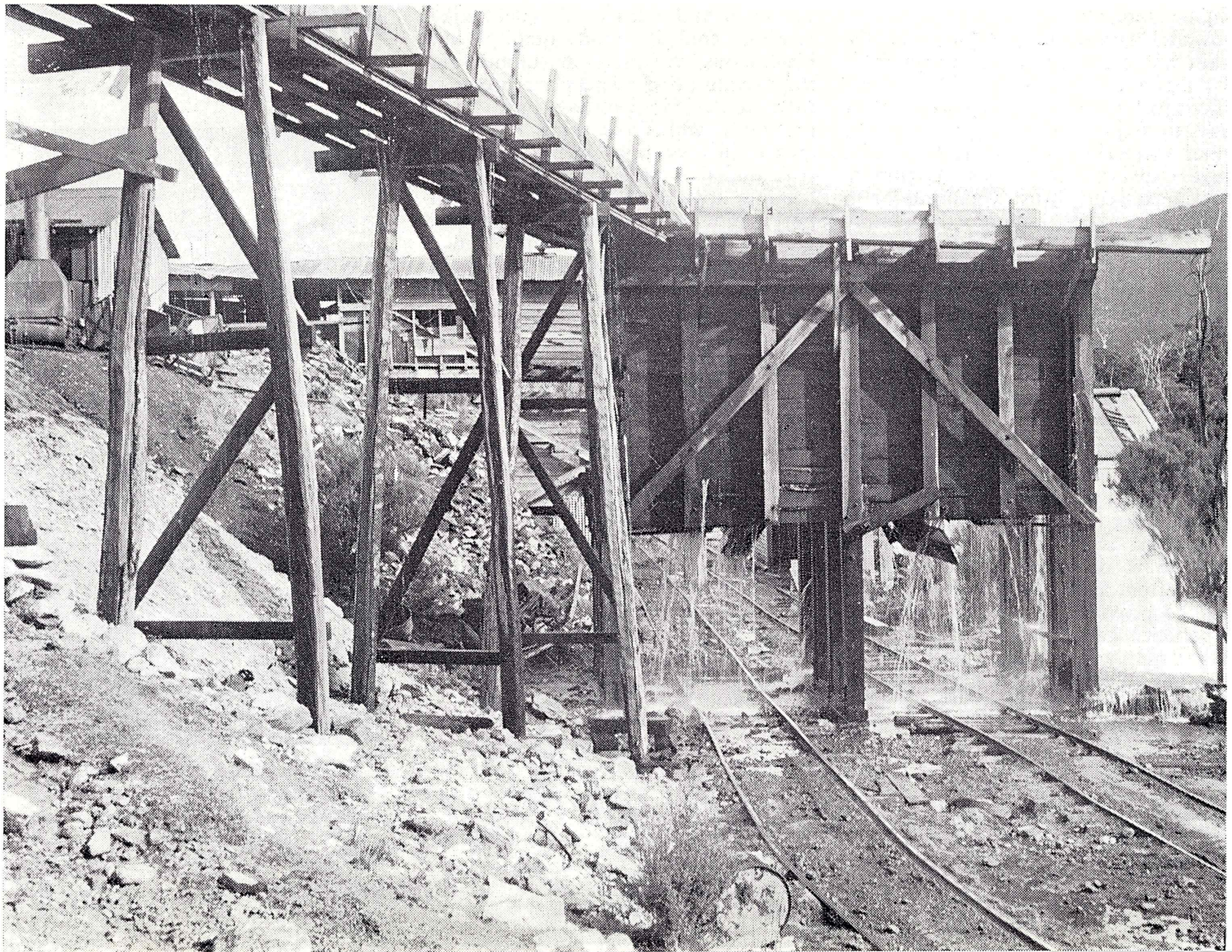
Railway ambulance at Rewanui.

Hydraulic mining at Charming Creek.



Converting to hydraulic: Charming Creek Mine when hydraulic transport was being introduced. Mr T. Moynihan and son walking along water pipe.

Flume and bins at Charming Creek.



This mine used rail for transporting the coal to the New Zealand Railways railhead, and before beginning production in 1929, two years were spent building seven miles of railway through the bush. In that distance the tramway climbed 350 ft. A change-over to hydro mining began in 1954, largely initiated by Mr T. Moynihan (see "Coal", Vol. 13, No. 1, page 6), who derived the system from water-mining techniques used by gold miners. Mr J. Duncan, the present manager of the mine, also contributed considerably in the development of the hydraulic hoist (which lifts the coal 100 ft.) when it was installed in 1955-57. Over a million gallons of water are used each day, transporting the coal over a mile underground to the hoist. About 900,000 tons have been produced since the mine began working, and 180,000 tons are proved to be remaining. The coal is good quality of 13½ thousand BTUs, just over two per cent ash, and is used by cement and brickworks. A staff of eight is employed.

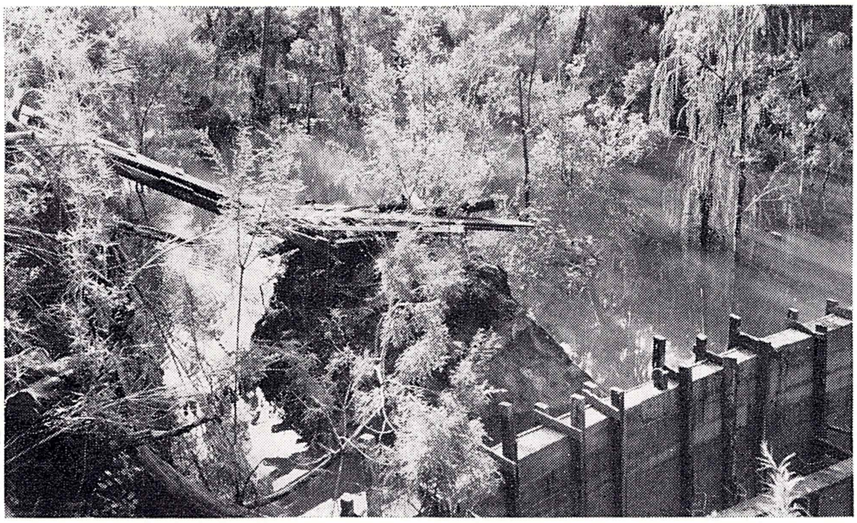
False Teeth and Flumes

Another private mine with a long history of hydraulic operation is the Cascade, a few miles from Westport. At the bottom of a steep valley, the Cascade originally used flumes to transport the coal seven miles across rugged country covered in thick bush. Messrs J. Stewart, B. Lightbone and B. Neighbours, who had all worked for the old mine, gathered at Waimangaroa to reminisce about the old days and tell "Coal" the history of the flume.

The first company managed about three miles of the flume until in 1926 or 1927 part was washed out in a flood. A Mr A. Hunter had the contract to repair the damaged part, and built a further three miles. The last mile — "a rough mile" — was built by Mr H. Lowther, the company's overseer. The first manager, a Mr Whittlestone, used trucks and rails to work the coal to the flume.

Faults in the seam caused difficulties with the trucks, and the mine was not economical. Therefore, Mr T. Moynihan introduced hydraulic methods of working the coal, in conjunction with Mr Stewart and another miner, Mr E. Humphries. Eventually a party of 18 was built up, some stationed at points along the flume to supervise the coal transport.

"It's a wonderful method to use," Mr Stewart told "Coal". He was referring to the hydro system, and reiterated the advantages of safer, cleaner and more economical production. "The first time the coal was handled manually was when it was thrown on the fire." The flume was small, but could handle 8 tons an hour, and it proved the feasibility of the system. Because of the low grade it was often worked 24 hours a day to get the coal to the railway at Buller.



Dam for water supply at Charming Creek.

A sawmill on the mine site provided the timber for the flume (even the mill was worked by water power).

The men went in on the Monday and came out on the Saturday, Mr Stewart said, adding that: "The meat got pretty rotten!" Four married couples lived there, with some seven or eight baches for the single men. The men stationed along the flume reported every half-hour by telephone, and the man at the Buller end, who lived at Westport, talked nightly by phone to another operator whom he never met for two years.

Newspapers were sealed in a tin and floated along with the coal to each point. The time taken for the tin to cover the distance between each point was known, and, as one was released, the next point would be advised by telephone. In the days before radio, the loneliness of the job was accentuated if a tin were missed!

Even pay cheques were sent down by the flume — one getting away on one occasion, being located on Carter's Beach by a small boy a fortnight later.

Mr R. Pratt, licensee of the Cosmopolitan Hotel at Westport, but a former miner at Cascade, remembers a miner losing his false teeth at the face. After being swept out of the mine with the coal the teeth travelled down the flume, into a railway wagon, were loaded on to a collier's hold at Westport in a shipment of coal and were found by a man filling a sack of coal in a Wanganui coalyard. The teeth were returned to the owner, minus one tooth, but he had bought another set in the meantime.

Birds and Bush

Typical West Coast bush makes the Cascade Mine another scenic beauty spot, and Mr Stewart recalls the bush robins being so unafraid of men that they would walk on to tables and try to eat butter during mealtimes. Heavy frosts in winter, heat in summer, and the 300 in. per year rainfall were recalled by the miners who used to work at Cascade. Supplies had to be packed in by horse, a 3-mile trip negotiating heights and gorges where earthquakes had caused recent slips and damage.

The present road access (negotiable by trucks but not by car) was put in about 1941. Floods having destroyed the flume, the coal today is taken out by lorries. The seam is faulted, but is basically a continuation of the Stockton seam, producing very good coal once greatly in demand for railway use. The present Cascade mine (mining in a different part from the former workings) is worked by a party under Mr J. Stone.

By Rail to Rewanui

Rewanui, accessible only by railway from Greymouth, is another West Coast locality being discovered by tourism on account of its coal, and private mines and State (Liverpool No. 3) exploit the coal there. In the days of steam the engines employed the Fell centre-rail system to climb the steep incline, but diesels now make the ascent without that aid. A complete community once existed at Rewanui, serviced by the railway, but the houses — and their occupants — have gone now.

Private mines at Rewanui use hydraulic systems or are converting to this, the system's advantages being recognised as improving the viability of mines in the present market conditions. Like other private mines about Greymouth, these are experiencing difficulties in establishing summer markets now that the railways no longer use coal.

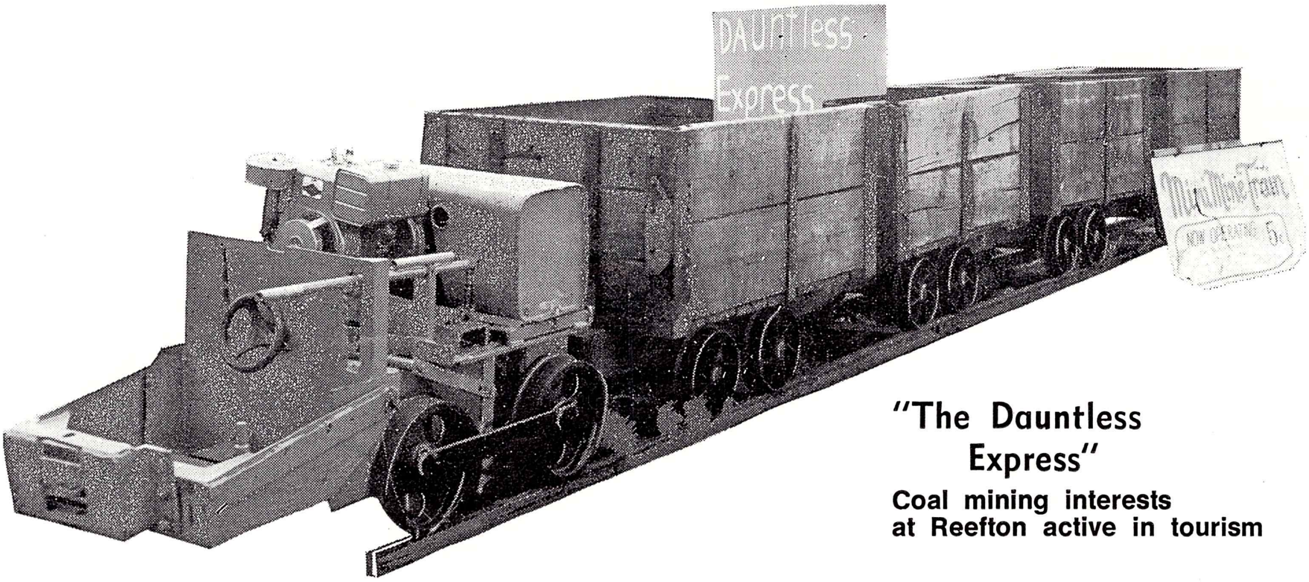
Rewanui is at the head of the Seven Mile Valley (a series of valleys in the hill range above Greymouth, running to the sea are known as the Ten Mile, Eight Mile, etc.). The Ten Mile is another typical West Coast Mining scene of green, bush-covered hills — accessible by road. Private cars cannot climb the branch road from the valley floor, however, leading to the Alpine and Snowline mines: two other mines converted to hydraulic extraction. This branch road offers an exciting ride by truck, twisting and turning abruptly in its climb through the magnificent bush, with wonderful views of the valley sides. From the Alpine Mine the Kiwi mine, on the other side, appears as a tiny collection of buildings perched precariously in a huge expanse of trees.

Ordinary cars can reach the Braehead Mine in the Eight Mile Valley, and again the bush and hills present scenic beauty which would make any tourist happy: once more a far cry from the drabness so often associated with coal mining. Other mines in the Eight Mile are the New Jubilee and the Bellevue.

Poets, Painters and Potters

West Coasters seem to include numbers of poets, painters and potters ("Coal" had an interesting discussion about pottery in the depths of one mine): possibly a result of the strong Irish element on the Coast. Nevertheless, after visiting West Coast mines and experiencing the incomparable beauty of the region, the influence of the scenic wonders must be an inspiration. Whatever the popular misconceptions about coal mining may be, a visit to the mines on the West Coast is far more like a tourist treat than a duty. The almost universal adoption of hydro mining shows the industry as being keen to progress and be competitive through greater efficiency; its contribution to the local enterprise in tourism shows awareness of community interest; the quality of the coal and the energy of the miners in extracting the mineral despite the difficulties of the severely faulted seams shows a willingness to persist despite handicaps. These are all qualities that should help the West Coast coal industry to face competition and continue to develop coal through present trading conditions and re-establish the industry as contributing to the future economic wealth of the region.

In preparing this article on West Coast mines, "Coal" thanks all those in the industry, both State and private, at all levels, and associated interests who assisted. So many gave their time that we cannot list them individually, but the thanks of "Coal" is expressed for their co-operation, without which this could not have been written.



"The Dauntless Express"
Coal mining interests at Reefton active in tourism

COMBINED RESPONSIBILITY UNION OUTLOOK . . .

"We've got to sell coal as much as management," Mr J. Dickson, President of the Buller Miners' Central Committee told "Coal". Mr Dickson is fully aware of the advantages hydraulic mining offers and actively urges its adoption in West Coast mines. "Hydraulic extraction is the only salvation for West Coast mines," he said, in discussing the difficulties the faulted seams present in introducing modern techniques. The higher output per hewer shifts, the greater extraction, the lesser manpower in servicing coal removal from the mine and the cleaner coal are all among the reasons why the union advocates hydraulic mining.

In pressing for such improved methods, the union is also conscious of the need to give better service to customers through improved quality control and is in favour of a central sorting and packaging centre in Christchurch (nearest major market for West Coast coal). The union is aware of the competition offered by other fuels and is keen to see coal service improved throughout the industry, so that coal can be fully competitive.

Pulverised-fuel boiler firing is another advance the union recognises and is pressing to have this method introduced in more services to enable industry generally to benefit from the cheaper fuel costs and efficiency that coal provides with this system.

Mr Dickson takes a leading part in community activities such as the Ratepayers' Association, and fully practises his belief that unionism today needs to share management and local problems so that union members, in taking part in such responsibilities, can share in any progress the coal industry makes as a reward for its contribution to that progress: an example of 1970-type outlook typical of modern industrial relations which is well removed from past attitudes.

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Buller Coal Confidence

Confidence in the future of Westport coal is justified, says Mr T. Brazil, District Manager of State Mines in the Buller.

The New Plymouth power station, scheduled to be commissioned in 1973, will definitely take at least half a million tons of coal a year, even although other fuels (depending on results of off-shore drilling in Taranaki) may supplement coal. If there is no natural gas, the use of Buller coal at New Plymouth station will rise to a maximum of 1 million tons by 1975. This figure should eventually be reached even if considerable reserves of gas are proved in the future development of electricity generation.

The Buller district has ample reserves to meet this need, and opencast mining at Stockton and hydro transport of coal in underground workings will ensure production will meet this demand efficiently.

The Stockton opencast has reserves of more than 14,000,000 tons. The seam averages 30 feet in thickness, with an overburden ratio of 2.6:1. The overburden consists of hard quartz grits and sandstone with minor interbedded mudstone and shale. The rock can be fragmented by blasting and does not require secondary holes if large shovels are used to work it.

The Mines Department has invested heavily in the equipment for working the Stockton opencast. A Marion 5-yard shovel, used on the Westport Harbour extension by Wilkins and Davies, is valued at about $350,000. This is powered by electricity (6,000 volts) and is worked by the Ward-Leonard control system, which is simple and allows great accuracy.

A Ruston Bucyrus RB43 shovel with a 2⅜-yard capacity is used to strip overburden, and a fleet of two D8 bulldozers (value about $60,000 each), one D7, one D6 and an Allis Chalmers HD19 are currently working on the stripping and handling of isolated blocks. Three Dart trucks for stone work (18 yards level capacity, 22-23 yards maximum), three Dart articulated trucks and four Leyland coal trucks (12-ton capacity) complete the present equipment.

Tenders have been called for further machinery, including proposals for two 10-yard shovels, and for drills and trucks to a value near $3 million.

Transport of coal by water power in underground mines promises the prospect of cheaper production: under most favourable conditions; production costs may be as low as one quarter that of the older methods. With water brought under pressure to the coal face, the loose coal dislodged by shot firing is swept up and carried away in flumes out of the mine to holding bins.

The feed pipes, beginning with 30 in. diameter, reduce through 12 in., 8 in., to 4 in. from their source to the face. This provides sufficient water to reach the far side of Mt. William, where three 1,000 gallons per minute pumps are installed (only one working at present).

When producing coal, the miner stands back out of the way of any possible falls. Where the grade is sufficiently steep the water run-off carries the coal along the tunnel floor, and in lesser grades the wooden flumes of 18 in. by 18 in. cross section direct the water/coal flow. The flumes are usually made of 12 ft. lengths, with liners on the bottom of soft wood blocks 3 in. thick cut across the grain to protect the flume floors from abrasion by the coal and breaking of coal.

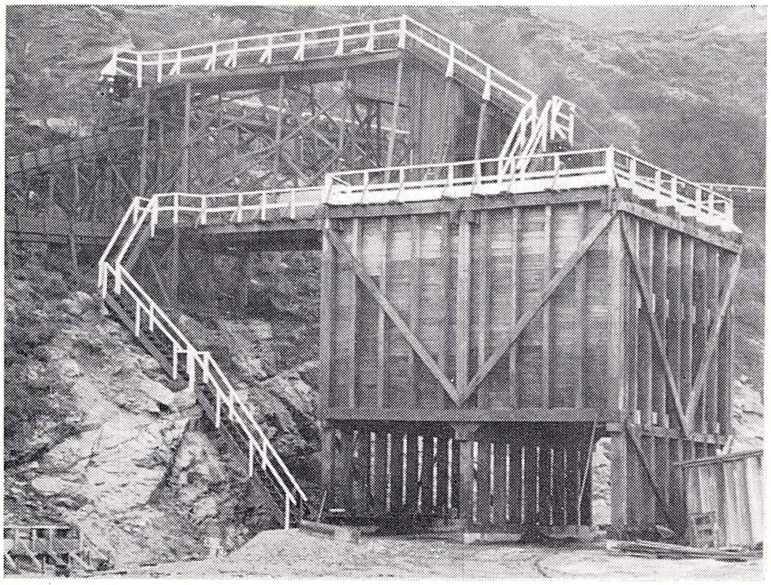
"Boil boxes" absorb surplus kinetic energy in the flow where the grade steepens. These boil boxes are sudden increases in the depth of the flume. A grade of steeper than 1 in 20 will allow the coal to flow over the mine floor, aided by water, or if the grade is steeper than 1 in 1 the coal will flow unaided. Where the grade is flatter than 1 in 40 a flume with a smooth surface is needed, and for a grade steeper than 1 in 4 the flume must be totally enclosed with boil boxes to break down pressure. (This enclosure is also needed where the floor is soft.) Experience so far suggests that a grade of 1 in 25 to 30 appears to be ideal for transporting coal in flumes.

At the far end of the race, the water/coal flows over a perforated metal strip at an angle of 45 degrees or greater, allowing the water to fall away while the coal sweeps down to its bins.

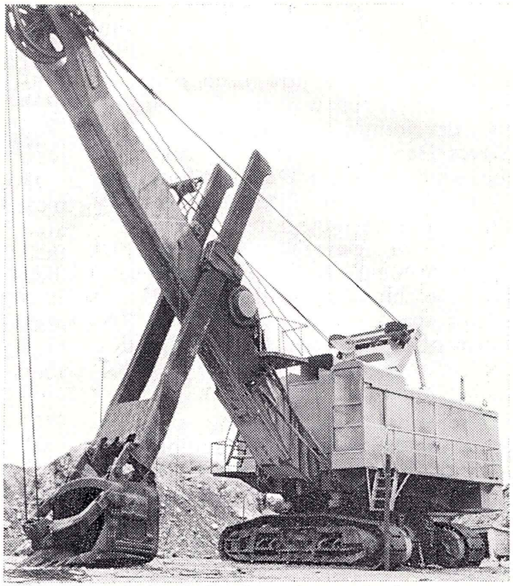
These details of flumes laid at grades of 1 in 25 which can easily handle the capacities shown:

Size of flume	Quantity of Water	Tons /Hour
12in.x12in.	2½ cusecs	52
18in.x14in.	3½ cusecs	50
20in.x12in.	3½ cusecs	60

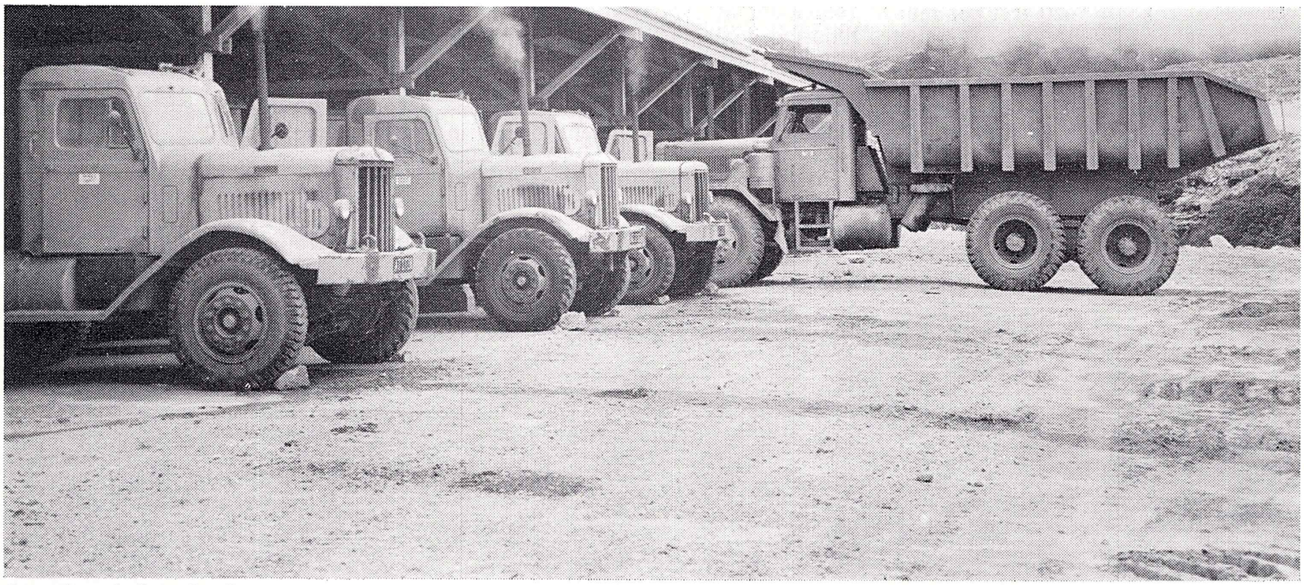
Stockton mine is 2,600 feet above sea level, and an electric locomotive worked by direct current overhead wire and a tramway on a steep in-



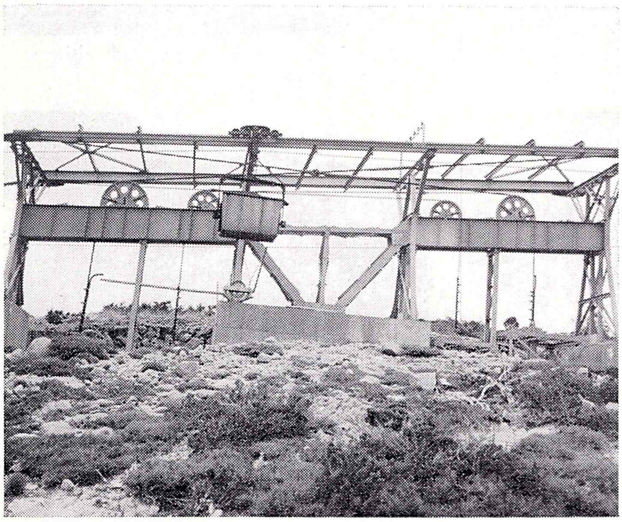
Coal bins, Mt William mine



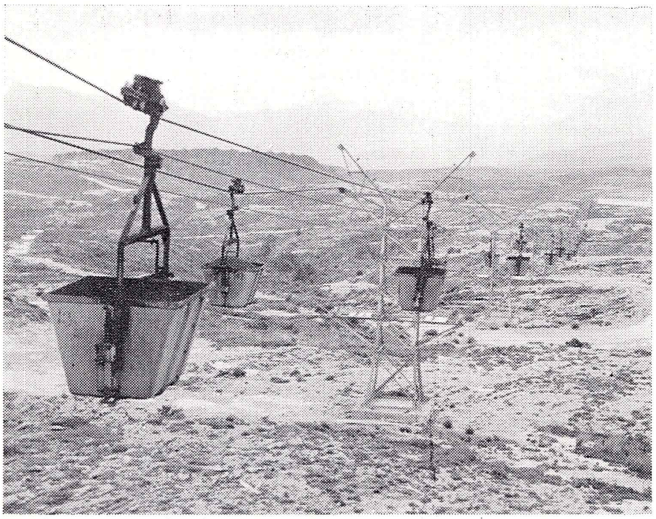
Marion 5-yard shovel, Stockton opencast mine



Part of truck fleet, Stockton mine



Divide station, Stockton bicable ropeway



Bicable ropeway, Stockton mine

cline originally lowered coal to the railhead.

All of this has now been replaced by an aerial ropeway which is one of the developments instituted by the Mines Department since it took over the mine from the Westport-Stockton Coal Company in 1948. The bicable ropeway is $5\frac{1}{4}$ miles long and the difference in elevation between the upper terminal at Stockton opencast and the bins at Ngakawau (75 ft. above sea level) is 2,560 feet. Because of the steepness of the grades the aerial is divided into five sections, each with its driving station.

There are three loading stations, (one also being an angle station), an additional angle station, three divide stations, an unloading station, four protection bridges and necessary supporting trestles. Design details are:

Type of aerial	Bicable
Capacity	223 tons per hour
Speed of rope	420 feet per min.
Net weight of load	27 cwt
Number of loads per hour	167
Spacing of loads	$50\frac{1}{2}$ yards
Time interval	21 seconds
Number of buckets on line	370
Allowance for stations	14
Total number of buckets	384

The cost per ton of transporting the coal on the ropeway is about one-third the cost for similar tonnage on the old system and with coal power (if used) will be minimal by comparison.

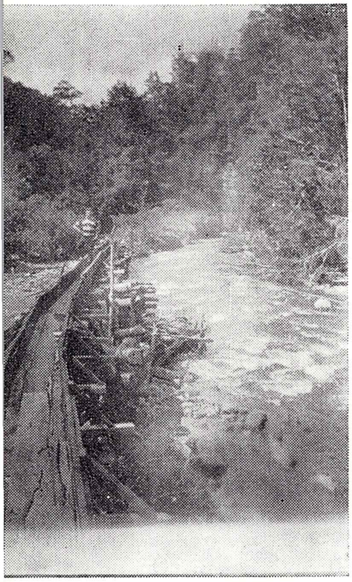
Swept by strong winds and phenomenally high rainfalls, the Stockton area is a fascinating sight. Generally, the coal-bearing areas are bare of the spindly bush which struggles for survival on the crests of the hills, and weird rock formations (formed by the erosion of wind and rain) stand out with occasional outcroppings of coal seams. When opencast areas are worked out, it is hoped that some hardy tree types can be planted, if not for future milling, then at least to contribute to conservation and the scenic advantages of the area.

Buller mines have a long history in New Zealand's coal story. Charles Heaphy and Thomas Brunner first reported coal in 1846, and after later reports surveying began in 1863. Transport difficulties put a stop to early mining efforts, but serious mining on the escarpment began in 1878, a not inconsiderable achievement in combating the transport difficulty from the height of 2,000 ft. So far the Stockton mine has produced more than 8 million tons of very high ranking bituminous coal with a rating of 14/15,000 B.T.U.

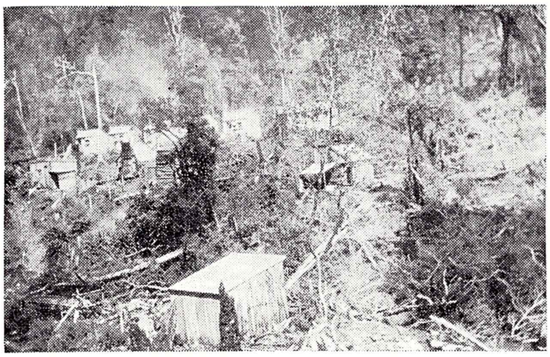
Sulphur content varies between 1 per cent and 2 per cent, with Mt. Frederick and No. 2 blocks having less than 1 per cent content. Some of the coal is particularly suitable for metallurgical coke or carbon anodes.

Also in the Buller area, the Escarpment mine has a reserve of $\frac{3}{4}$ million tons, and the Sullivan mine, with the largest proven reserves in the Dennistón area of 2,266,000 tons is producing only on a small scale. This mine is at present being mechanised and output can be stepped up easily at any time. The Whareatea mine was a very large unit but is approaching the end of its life. The Millerton mine, formerly the biggest producer of all hydro underground mines in New Zealand, closed in September after producing 10,363,504 tons.

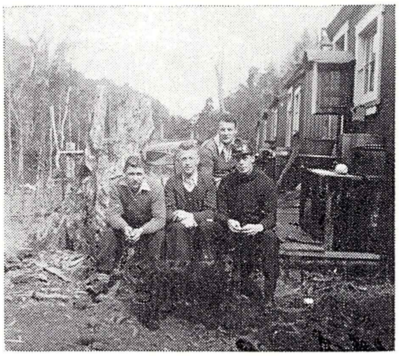
The Mines Department at Buller reports that ten more facemen and approximately 12 others have begun work at the Mt William mine. Further experience with the hydro system shows it promises well for efficient development.



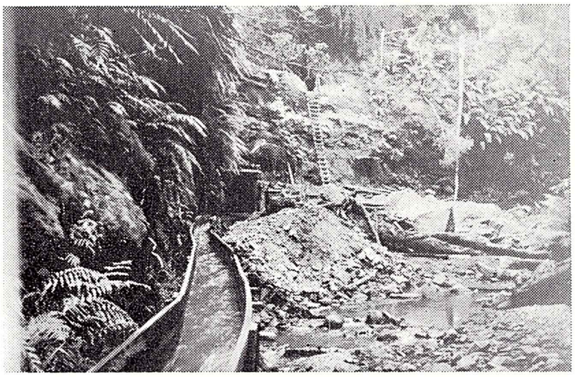
Mr J. Stewart poses beside the flume.



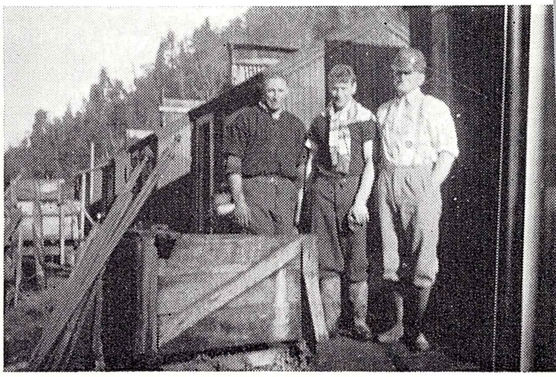
Camp during construction of mine and flume.



Joe Easton, Jock Brown and visitors: note baches.



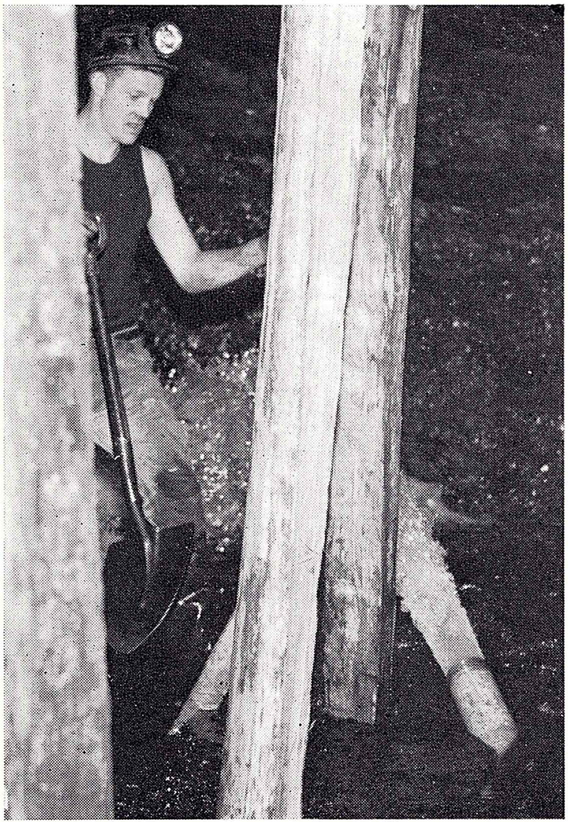
Flume passing through tunnel, in typical country.



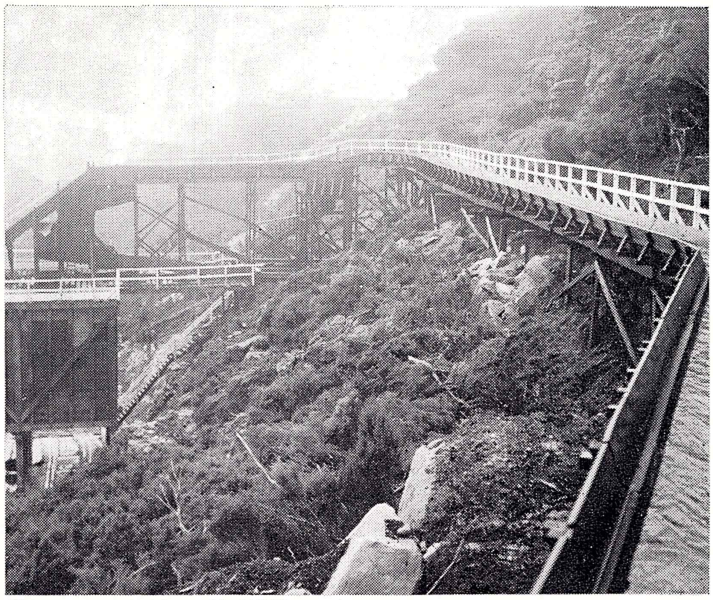
Frank and Ben Neighbours with visitor.

Drilling coalface, Mt William mine

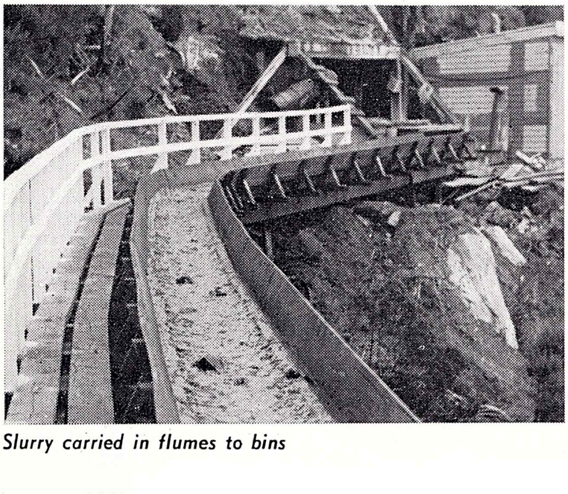
Loosening coal after shotfiring, Mt William



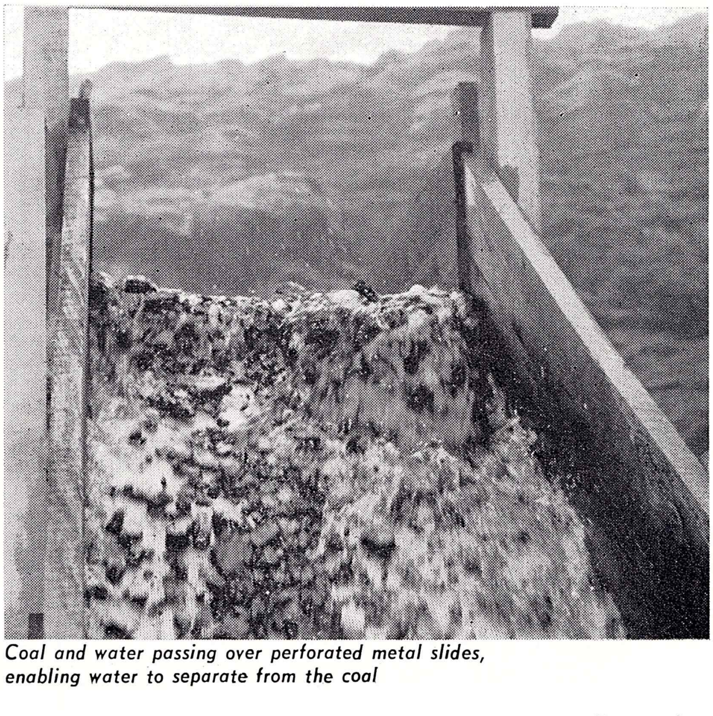
Water discharging into loose coal at coalface



Slurry emerging from Mt William mine

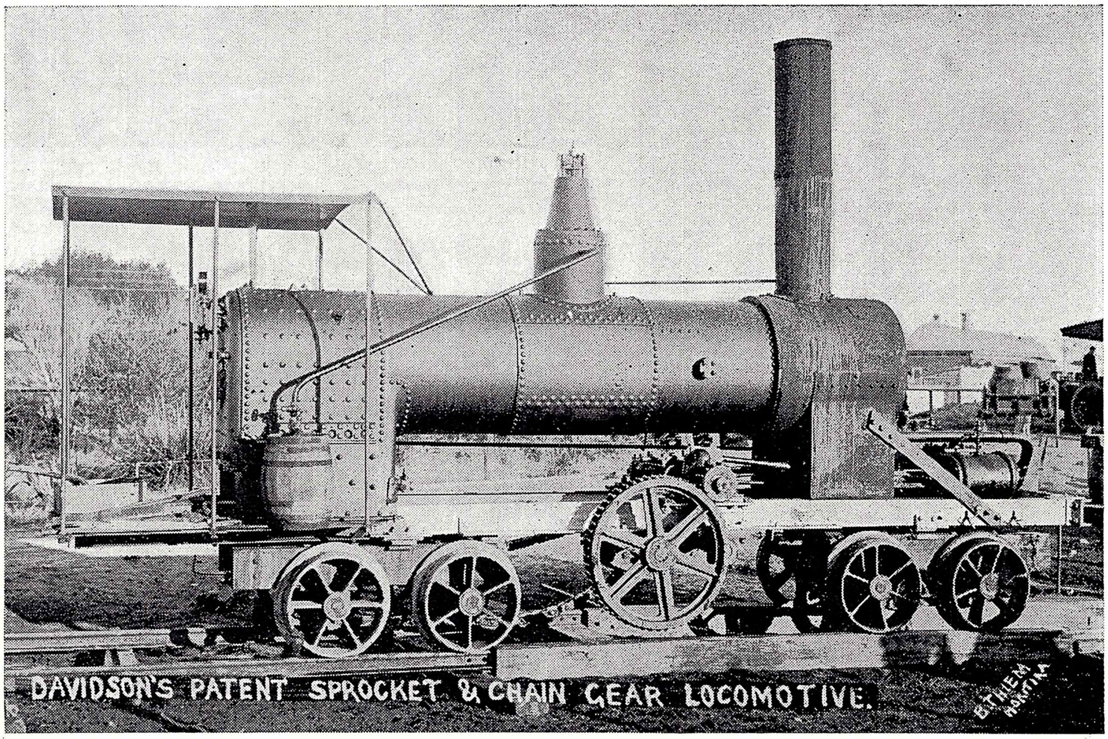


Slurry carried in flumes to bins



Coal and water passing over perforated metal slides, enabling water to separate from the coal

HOKITIKA STEAM LOCOMOTIVES



DAVIDSON'S PATENT SPROCKET & CHAIN GEAR LOCOMOTIVE.

B. THIEM HOKITIKA

Hokitika flourished with the West Coast gold rush in the 1860s; did not benefit from the coal industry (through lack of seams) in subsequent years; now is moving ahead through tourism and dairying.

Nevertheless, Hokitika enterprise once produced bush locomotives, selling them not only to Coast lines but also as far away as the North Island. They were produced by the G. & D. Davidson Foundry, using a principle patented by the firm. Boilers were beyond the capacity of the Hokitika works, so these were sometimes made by the Dispatch Foundry at Greymouth, or bought secondhand from the N.Z.R. (these were taken from "D" and "F" locomotives as they were reboilered). Wheels and gears were bought in; otherwise all other work was done in Hokitika.

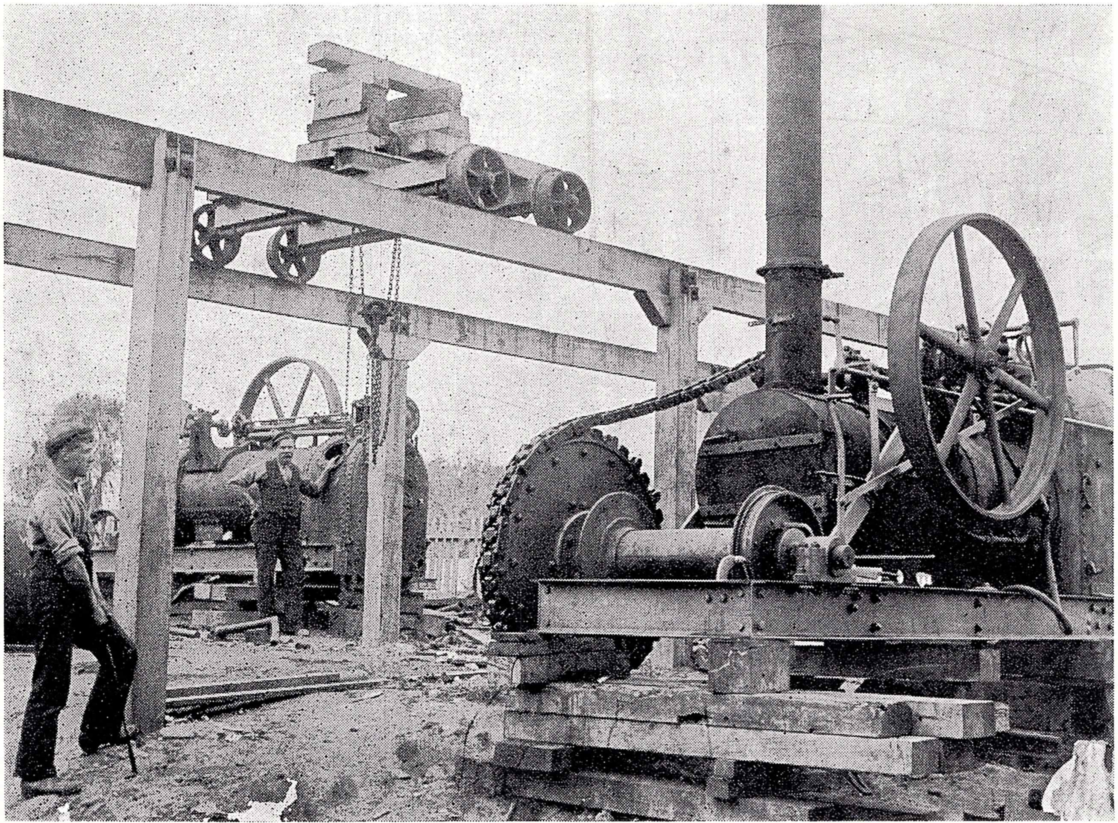
Mr Hector Davidson, at Hokitika, now retired, recalls the sprockets being assembled from separately machined teeth bolted to the sprocket circumference. The pistons drove the sprocket through gears, and drive to the engine wheels was by chain.

The patent lay in the chain. Because it was realised that the pin holding the links took all the force of the drive, a shoulder was machined on each link to carry the next. Should a pin break, the chain did not fail with this system.

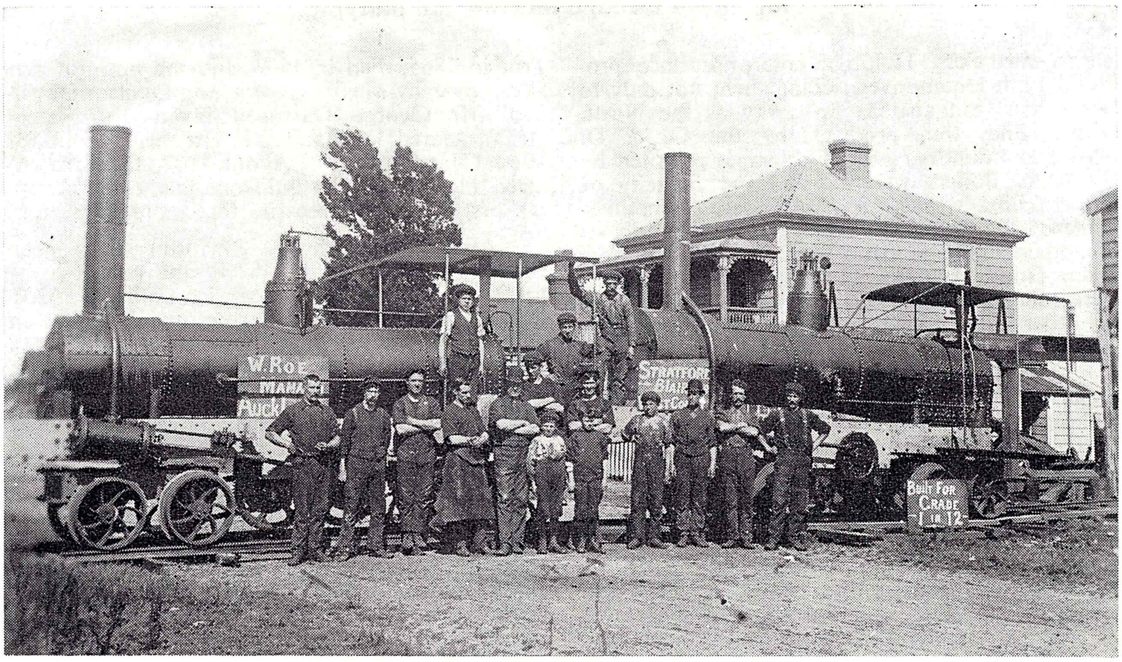
Mr George Davidson, who founded the firm in 1865, died in 1897, and the business was taken over by Messrs George and Duncan Davidson. Mr George Davidson invented a patent steam, geared log hauler, several being built for West Coast sawmills. About 1907, the firm entered the field of bush locomotive construction, the first being so successful that more were built.

About 17 G. & D. Davidsons have been traced (detailed records were not kept by the firm), some continuing in service until the 1930s. Because the locomotives were mainly used on timber companies' bush railways, wood was a convenient fuel, but the boilers could also take coal whenever this was easier to obtain.

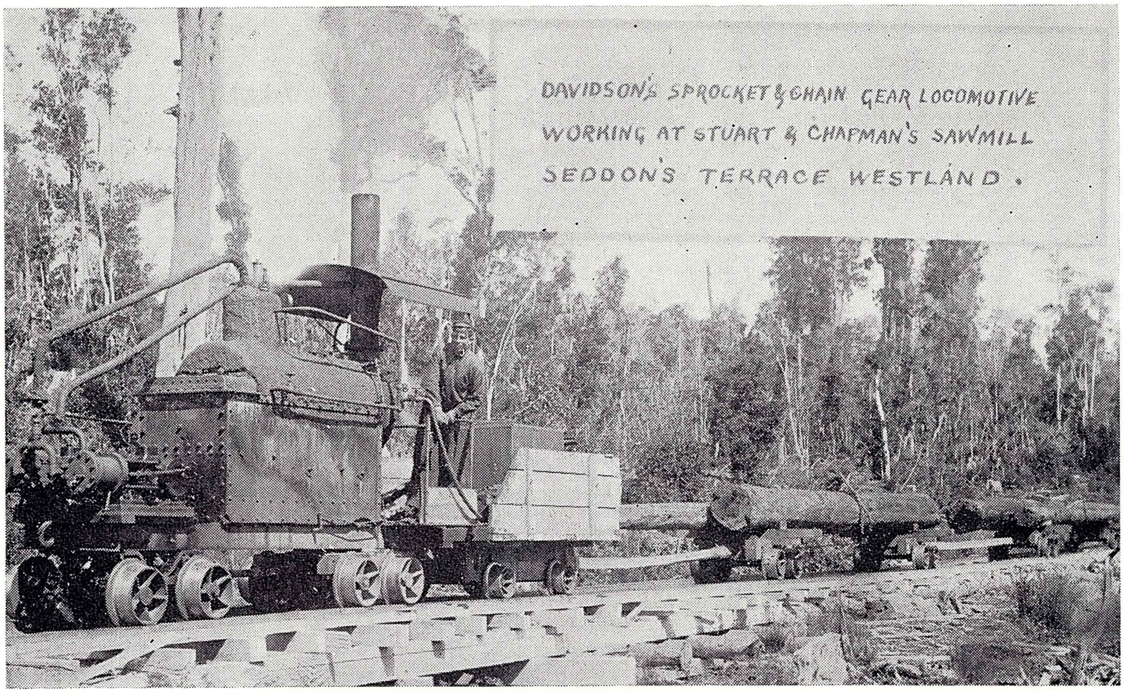
Two third generation Davidsons are still with the foundry, which is operating under the original name, although managed by different interests. One of the family is Mr M. J. Davidson, who is assistant manager. While the foundry is active, its present work in farming and other mechanical lines does not give any hint that once it associated Hokitika with a highly successful enterprise: the construction of bush locomotives, which were highly regarded by their users.



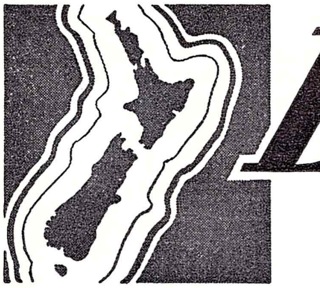
G. & D. Davidson steam log hauler.



These two locomotives were built in Hokitika in 1911 by G. & D. Davidson Ltd. for A. W. Roe, Mamakau, and Stratford and Blair, Greymouth.


DAVIDSON'S SPROCKET & CHAIN GEAR LOCOMOTIVE
WORKING AT STUART & CHAPMAN'S SAWMILL
SEDDON'S TERRACE WESTLAND.

Davidson's sprocket and chain gear locomotive working at Stuart & Chapman's sawmill, Seddon's Terrace, Westland.



District News

— KAITANGATA —

Loss of orders for coal from the Kaitangata Mine, near Dunedin, has led the Government to propose closing the mine. The Minister of Mines, the Hon. N. L. Shelton, discussed this eventuality with miners and Kaitangata township representatives at a meeting in the borough on February 11. Unless a market for the coal can be found, Government proposes to end production and close the mine from September of this year, ending over 100 years of coal production in the area.

It was in 1843 that coal was found at Coal Point, four miles north of the mouth of the Clutha River. Five years later coal workings were opened up at that point and the first organised effort to exploit the coal was in 1872, when the Kaitangata Coal Company was formed, acquiring mines already in the area.

The company built the railway between Kaitangata and Stirling.

Kaitangata has the unfortunate distinction of being the scene of New Zealand's first major mine disaster, when 34 men were killed on February 21, 1879. The result was legislation for regulating coal mining.

The company was later bought out by an English syndicate, but in 1927, when it seemed the mines might be closed $20,000 was subscribed locally. The mine continued until 1959, by which time 7,000,000 tons had been extracted. Losses having risen, the Mines Department took over in 1955. In that year the department began preparing a new mine to keep up production and keep the miners in employment when the older workings closed down.

There has been no strike or stoppage at Kaitangata in over 40 years, and the supply of coal continued even in 1951. This record influenced the Government in its decision to open the new mine, it is believed, and Mr Shelton when addressing the meeting on February 11, paid tribute to the miners for setting this example of industrial relations.

Production from the new mine (named the Lockington, after the manager, Mr Frank Lockington) began on July 16, 1958, and by mid-1959, the old Kaitangata Mine was worked out.

The Lockington was the only underground mine in the Kaitangata field, but two opencast mines are operating (the Wangaloa State Opencast and the privately-owned Kai Point). These produce 15,000 and 17,000 tons respectively of lignite for local markets.

— OHAI —

Correspondent: FRANK MARSHALL

Weddings: On election day, November 29, Russell Small, second son of Mr and Mrs C. H. Small, was married to Miss Maureen Noble, of Invercargill. Russell and Maureen are living in Ohai, where Russell is Colliery Clerk at the Ohai Office. Maureen is a former member of the State Coal Depot Staff at Invercargill.

Miss Renee Johnston, elder daughter of Mr and Mrs T. Johnston, Ohai, married Mr Glyn Jones of Victoria, Australia, on December 22, at the Presbyterian Church, Ohai. Mr and Mrs Jones will live at Edgecumbe in Canterbury, where Mrs Jones will continue teaching and Mr Jones will complete his degree at Lincoln College.

SPORT

Bowls: The Bowling Club has enjoyed another successful season. The Ohai green is in excellent condition because of the efforts of Charlie Orr. The game is also booming in Nightcaps, where several promising young players have taken it up in the last year or two.

Indoor Bowls: The game of indoor bowls is normally in recess in the summer in Ohai, but a new departure was the holding of a rinks tournament on Sunday, February 1.

A bus load of Ohai indoor bowlers paid a Sunday visit to Kaitangata a few months ago. Reciprocal visits between the two clubs are to be a permanent feature of the bowling season.

Cricket: The local cricket team has dropped the name "Ohai" and is now called "Wairio Cricket Club".

The team is enjoying moderate success in competition with Waiau, Riverton, Otautau and Winton Clubs.

The State mine office representatives, Rodney McColl and Adrian Shirley, have both enjoyed a successful season. The top bowler is Robin Todd of Morley mine.

Tennis: The Ohai tennis club had two teams entered in the western competition. Players that impressed were Miss Lyn Ellis, Miss Peggy Taylor, Darryl Pinn and John Ellis. Darryl Pinn also won the western singles championship.

Swimming: In October, 1969, a meeting of all interested people was called to form a local swimming club. The meeting decided it would be most beneficial to the district and unanimously voted that it be formed immediately. The new club was to be known as the "Ohai Swimming Club" and was to serve Nightcaps, Wairio and surrounding districts. The president is Mrs Fevers, and secretaries are Mesdames Cochrane and McIvor.

Learn-to-swim sessions as well as coaching lessons have been held for three hours every Saturday morning.

In the short time it has been operating all children attending have improved. The membership stands at about 150.

Two successful local carnivals have been held and competition in races was very keen. Some young swimmers have shown considerable ability and a total of 19 were entered in the Southland country districts championships held in Gore on Sunday, February 8.

The club was fortunate to obtain the services of a coach from Invercargill for a weekend, and during the time Mr Dawson was here improvement was noticed in the finer points of swimming.

With application to their training and attention to the advice of the coach it should not be long before the club could have members competing in the Southland championships.

Thanks are expressed to a small, hard-working band of committee members and also to the swimming baths committee for their co-operation and assistance in getting the club under way.

Obituaries

Dr. G. Wood, who died in Nightcaps recently, was the district's resident doctor and one of the best-known personalities in the coal mining area. He had lived here the greater part of his life after succeeding to the practice of Dr. J. P. McQuilkin. Dr. Wood was noted for his devoted attention to his patients, which went in many cases far beyond the call of duty.

Mr J. Lewis, who was the mine manager for the Westport Coal Company's Birchwood Colliery (taken over by State mines about 1946), died recently at Peacehaven at Invercargill. He was 88. Mr Lewis was born at Dunedin, worked on a farm for a short time and then, in the year of gold strikes, worked in the Cromwell district panning for gold before going overseas in World War I. At first he was in the Otago Mounted Rifles, fighting in Egypt and France, but then transferred to an engineering division. After the war he married and lived at Nightcaps for five years before coming to Ohai. Throughout his life Mr Lewis retained a keen interest in rugby and cricket.

Mr Jas. Isaac Hazeldine, who died on January 24, worked at the Ohai screening plant for a considerable number of years. Of a quiet, retiring nature he nevertheless had a wide circle of friends.

— BULLER —

Correspondent: BILL MILLER

The Christmas holiday period and January have given the best weather for many years, with tourists making the most of it. During the holiday the hills were a blaze of red from a wonderful display of rata blossom.

An innovation begun during the holidays is still carrying on. This is "Bus Tours" from Westport to the mines on Tuesdays and Thursdays of each week and these have proved to be very successful. Everything is arranged in Westport. The tourist leaves his car in Westport and has no worries about how to get to the mines, or of getting mixed up with the heavy transport at the mines. All he has to do is to ask questions and take photos.

He will be shown the mining townships and hear about their history. Underground he will have the working of the mine explained by mine officials, who will also answer questions. Morning tea is provided.

There is a lot of talk in the district on the Karamea-Collingwood Road now; it seems it will become a reality in a few years' time.

There was a big run of snapper in early December, and in one evening, between Nikau and Ngakawau, surf fishermen and others fishing from a small boat caught 147 fish, the largest weighing 19½ lb. This gave the snapper competition a good start. (Two men in the boat took 27 snapper at sea, and several from the beach reached double figures; one I know caught 12.)

The Buller section of the R.S.A. bowling tournament was won by a rink skipped by Dick Harker. This rink represented Buller at the national finals at Nelson.

Mining News: A contract has been let and work begun to remove the old Police Station building which housed Forestry and Transport Departments in Palmerston Street, Westport. This site is for the proposed new Government block which will house the State coal mines, and Mines Department. Other Government Departments are also expected to be occupiers of the building.

Additional miners and others have been transferred from the Webb mine to the new North Mt William hydro unit at Stockton. Four pairs of miners are engaged on each of two production shifts in the new unit.

The 5 yd. Marion shovel is to begin preparing the new opencast area at the base of the present Webb mine workings shortly. The shovel will be powered by electricity.

With the expansion in the North Mt William mine the power force in the Webb mine has been reduced, and a number of underground workers have been transferred to surface works expansion and aerial transport.

Tests have recently been made of the carrying capacity of the aerial ropeway by the Mines Department, Ministry of Works and the N.Z. Electricity Dept.

Weddings: Dawn Blair—James King; Margaret Cox—Rex Gibson; Helen Crawford—Ron Pearson.

Engagements: Jan Mullins—Ian Stevenson; Shirley Morgan—Paul Cummings; Karen Morgan—Gary Collins.

Births: To Colleen and Billy Milligan, a daughter.

21st Birthdays:

Diane Tyler; Robert and Brian Murray; Peter Hill and John Dickson.

Obituaries:

It is with the deepest regret that the passing of some of our oldest and most respected citizens is reported:

Harvy Fox—late of Stockton; John Masterson—late of Granity; Jim Poynter—Hector; George Coe—Granity; Mrs Meech—Granity; Mrs D. Shearer—Granity; George Tyler—Granity.

Girl Guides: During part of the school holidays the Granity senior guides attended a camp at Lake Mahinapua, south of Hokitika. The camp was divided into three sub camps, each with six tents. The Granity guides acted as patrol leaders, and their duties included looking after the camp. health, cooking, colours and orderlies. Three guides passed the test for the Rescuer's Badge, and each brought home the Camp Badge. During the camp they visited: Franz Josef Glacier, a creek to see panning for gold, the greenstone factory, the milk powder factory and Fletcher's sawmill.

Round the campfire in the evening the fire lit up tired, but happy faces. A pleasant surprise for the girls was a meeting with Lorna Leech of the 20th Canterbury Group, and one of the leaders. Lorna used to live at Corbyvale and attended the Granity District High School.

Personal: Mr T. Cunniffe, electrician for many years at the Millerton Colliery, has left to join the Buller Electric Power Board.

— REEFTON —

Correspondent: J. H. MULLIGAN

Two local coal owners, Mr F. Halloran, president, and Mr Bert Waghorne, an executive member, are learning to fly. The pupils, with an instructor, are busy gaining experience in flying around the Reefton area every Wednesday. Rumour has it that they will later take off on a flying tour of Australia.

The continuing hot weather has dried up most of the streams that the private mines use for washing coal. Therefore, even though the water available is recirculated, short hours are being worked in some of the mines.

After the destructive fire at H. W. Smith's sawmill many of the men employed were faced with unemployment or very insecure jobs. The private mines provided jobs for six of the men, an excellent effort.

The year 1970 marks the 25th anniversary of the founding of the Inangahua Coal Owners' Association. At the last meeting of the Association the following committee was elected to make recommendations to mark the occasion: Messrs F. Halloran, chairman; R. McKenzie, vice-president; B. Halloran, D. Coghlan, B. Waghorne, W. Archer and J. H. Mulligan, secretary.

On Friday, February 20, the Grey Valley co-operative mine owners were to meet the Inangahua association at Reefton to discuss matters relating to the coal trade regarding price, orders, etc.

When there is so much talk about the troubles facing the coal trade and receding markets, it is pleasing to see that there are four new mines opening up in the area.

Don Coghlan and his partner, A. Anderson, are still holding their form well in the coal-shovelling events. Don and Albert carried off the first prize at the A. and P. Show.

Bert Eklund, who is fit and well at 75, can be seen at the mine every day, helping the boys.

— HUNTLY —

Correspondent: ROSS CLARK

Wedding: The marriage took place at Knox Church, Huntly, on Saturday, January 10, of Miss Kaye Gardiner to Mr Keith Bulloch, both of Rotowaro. The Rev. Simmons officiated at the ceremony, after which a reception was held in St John's Ambulance Hall.

Kaye, the daughter of Mr A. H. Gardiner, District Stores Officer in the Rotowaro office, has just completed her three years' study at Training College. Kaye's first year of teaching will be at Nawton Primary School at Hamilton. Both Kaye and Keith will live at Hamilton.

Keith is the son of Mr Andrew Bulloch, a well-known Rotowaro identity. The best wishes of all staff members go to the happy couple.

Obituaries:

The death occurred recently of Mr L. G. (George) Brown, Huntly, who before his death was employed at the Renown State mine.

Starting work as a boy of 15 in the Glen Afton mine, George worked a total of 30 years in the industry.

Always bright and pleasant, George will be missed not only by his family but also by the local community.

The sympathy of the office staff is extended also to the family of Mr B. Parker, who died recently. Mr Parker spent a lifetime in the mines, having worked at the Rotowaro mines.

Office News: Congratulations to Kevin and Jan Brazil on the birth of their little daughter.

A newcomer to the Rotowaro scene is Mr Merv. Keith, formerly of Greymouth, who took up his duties as draughtsman before Christmas.

Retirement: All will join in wishing Dave McLuckie, Huntly, and his wife a long and happy retirement. Dave began work in the Rotowaro mine in August, 1924, transferring to the Alison mine when it opened in 1942. It was from the Alison mine that Dave retired.

"the heat that came in from the coal"

HIGH SPEED
GAS
THE FUEL OF THE FUTURE
GAS ASSOCIATION OF NEW ZEALAND

TRAINING COURSES NOW OPEN FOR 1970!

The Advisory Services of the coal industry announce that during 1970 it will hold a series of courses throughout New Zealand. These courses are at different levels: for Engineers and Boiler Operators, School Caretakers and Smoke Inspectors, and cover combustion, coal and ash handling, boilers and stokers, instrumentation, boiler efficiency calculations, steam utilization, water treatment, smoke control, coal analysis, and boiler auxiliaries. Details of times and places are given at right.

If you are interested in attending and in training in industry for boiler house staff, please apply to the Fuel Engineer, P.O. Box 1701, Auckland, or P.O. Box 6593, Auckland; P.O. Box 5132, Hamilton; P.O. Box 1441, Palmerston North; P.O. Box 3041, Wellington; P.O. Box 1303, Christchurch; P.O. Box 1151, Dunedin.

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....

Please send me full particulars for enrolment in the following course: ....

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AUCKLAND

Engineers	April 20-24
School Caretakers	May 12-13
Boiler Operators	July 14-16
Smoke Inspectors	October 13-15

CHRISTCHURCH

Engineers	June 22-26